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# Automobile

## ART AND THE AUTOMOBILE

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INSPIRED BY MACHINES

## C7 HEAVEN?

HOW OUR YEAR WITH THE ALL-NEW  
CORVETTE STINGRAY WENT

## DAMSELS OF DESIGN

WHEN GM'S ALL-FEMALE TEAM  
MADE HISTORY IN THE '50S

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ON THE TRAIL OF THE

# 2016 CHEVROLET SILVERADO

WITH THE FOLKS WHO CREATED IT.

The 2015 Silverado 1500 was named "Highest Ranked Large Light Duty Pickup in Initial Quality" by J.D. Power<sup>3</sup> and the new 2016 Silverado comes from the same stock. The new face of strong, Silverado has a muscular front end that reflects its strength and capability. We sat down with the team of designers and engineers behind the new Silverado, the latest addition to the family of the most dependable, longest-lasting full-size pickups on the road.<sup>4</sup>







## JOHN CAFARO

EXECUTIVE DIRECTOR,  
GLOBAL CHEVROLET DESIGN

*This Silverado makes some great advances using new lighting technology. How did this technology inspire the vehicle design?*

Lamps are the windows to a truck's soul. They help give a truck its signature look—both during the day and at night. The new LED lamps on the 2016 Silverado gave us the opportunity to create a stronger, more expressive front end while giving our drivers substantial improvement in night driving and overall visibility. It highlights how much technology is in the truck.

*Truck design is one of the hottest areas in automotive design right now. What are some of the synergies between truck and other vehicle design?*

Corvette and Silverado have been the iconic bookends for Chevrolet design for more than 50 years. In the past, they had completely separate design teams. We now have a lot more cross-pollination in our design teams and design work. You can see that influence especially in the hood and grille. These trim details allow customers to express personality. Grilles are like cowboy boots—they are your calling card.

**“Grilles are like cowboy boots – they are your calling card.”**

John Cafaro

EXECUTIVE DIRECTOR, GLOBAL CHEVROLET DESIGN



## TIMOTHY ASOKLIS

CHEVROLET CHIEF ENGINEER – 2016 FULL-SIZE TRUCK,  
CURRENT PRODUCT SUPPORT

*The new Silverado was engineered with multiple enhancements, including articulating running boards. How do they work?*

A new feature on Silverado, available articulating running boards automatically extend down and out from the side of the cab to act like traditional steps. No competitor offers this feature. Just tap the foot control and they articulate rearward for access to the bed and its contents.

*Towing is important in a truck. What advances set the 2016 Silverado apart when it comes to towing capability?*

Throttle progression and grade braking are features that have come from our engineers studying the challenges

of pickup truck towing in the real world. Throttle progression, along with our available 8-speed automatic transmission, makes accelerating with a heavy tow load both smooth and quick.

Using intelligent and adaptive algorithms, steep hills are more easily handled with Grade Braking Mode, which transfers some of the burden of slowing down and stopping from the brake pads to the engine and transmission.



1 Requires Silverado 1500 LTZ 2WD 4-door Double Cab Standard Box or Crew Cab Short Box with available 6.2L V8 engine and Max Trailering Package. Class is half-ton full-size pickups. Before you buy a vehicle or use it for trailering, carefully review the Trailering section of the Owner's Manual. The weight of passengers, cargo and options or accessories may reduce the amount you can tow. 2 Requires compatible mobile device, active OnStar service and data plan. Visit onstar.com for details and system limitations. 3 The Chevrolet Silverado LD received the lowest number of problems per 100 vehicles among large light duty pickups in the proprietary J.D. Power 2015 Initial Quality Study. Study based on responses from 84,367 new-vehicle owners, measuring 244 models and measures opinions after 90 days of ownership. Proprietary study results are based on experiences and perceptions of owners surveyed in February–May 2015. Your experiences may vary. Visit jdpower.com. 4 Dependability based on longevity: 1987–April 2013 full-size pickup registrations.







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## THE ART OF PERFORMANCE

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## Time travel at the speed of a 1935 Speedster?

The 1930s brought unprecedented innovation in machine-age technology and materials. Industrial designers from the auto industry translated the principals of aerodynamics and streamlining into everyday objects like radios and toasters. It was also a decade when an unequaled variety of watch cases and movements came into being. In lieu of hands to tell time, one such complication, called a jumping mechanism, utilized numerals on a disc viewed through a window. With its striking resemblance to the dashboard gauges and radio dials of the decade, the jump hour watch was indeed "in tune" with the times!

The Stauer 1930s *Dashtronic* deftly blends the modern functionality of a 21-jewel automatic movement and 3-ATM water resistance with the distinctive, retro look of a jumping display



*True to Machine Art esthetics, the sleek brushed stainless steel case is clear on the back, allowing a peek at the inner workings.*

(not an actual jumping complication). The stainless steel 1 1/2" case is complemented with a black alligator-embossed leather band. The band is 9 1/2" long and will fit a 7-8 1/2" diameter wrist.

Try the Stauer 1930 *Dashtronic* Watch for 30 days and if you are not receiving compliments, please return the watch

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EDITOR'S LETTER

W

**COULD YOU LIKE TO PLAY A GAME OF** global thermonuclear war? That was the question in the movie "WarGames," in which Matthew Broderick hacks into a military supercomputer and (spoiler alert!) nearly triggers Armageddon. The movie debuted in 1983.

Decades later, Broderick is older and paunchier, and the threat of hacking is no longer a fantastical conceit. As more of our lives are run by computers, new frontiers continue to open to hackers. So it should surprise virtually no one that cars, which are becoming more computerized every year, are turning into an ever juicier target. Automotive hacking is not a new phenomenon, but until recently it was primarily achieved through physically plugging into a car's diagnostic port. As automakers breathlessly rush to add Internet connectivity and smartphone vehicle control apps to lure tech-savvy buyers, cars are becoming increasingly vulnerable. As many as 82.5 million vehicles are expected to be hooked up to the Internet by 2022, according to estimates by IHS Automotive. That's a target-rich environment.

It's not like we haven't been warned. "We find the existence of practically exploitable vulnerabilities that permit arbitrary automotive control without requiring direct physical access," wrote researchers with the University of California, San Diego, and University of Washington back in 2011. In English: Hackers could infiltrate and take command of a car through its cellular modem or Bluetooth connection—or even through music played in a Windows Media Audio format.

That scenario is now playing itself out, thanks in part to a recent *Wired* piece that showcased a stunning vulnerability in certain Fiat Chrysler cars. By exploiting a hole in a Jeep Cherokee's Uconnect Internet connectivity software, hackers Charlie Miller and Chris Valasek were able to plant code into the car's head unit, ultimately gaining remote control over multiple vehicle functions, including the transmission and brakes. It's the type of scenario that scares the daylights out of people—you're in the driver's seat, but no longer the driver.

It's important to note that Miller and Valasek are extremely experienced hackers who have been working to exploit vulnerabilities in vehicle computer systems for years. They spent an inordinate amount of time and effort worming their way into the Cherokee. Playing "Mario Kart" with your car is not something any hack hacker could pull off—or would want to. The bigger target for most malicious hackers (we wouldn't put Miller and Valasek in that category) is credit card numbers and other personal information. The potential is there to mine that type of data from your car.

New federal legislation aims to establish rules designed to secure cars against hackers and protect personal data privacy. "Rushing to roll out the next big thing, automakers have left cars unlocked to hackers and data-trackers," said Sen. Richard Blumenthal of Connecticut, who proposed the legislation with fellow Democrat Sen. Ed Markey of Massachusetts.



VOLUME 30 . NO.8 . NOVEMBER 2015

# COULD YOUR CAR BE HACKED?

Markey has for some time been sounding the alarm about the dangers of connected vehicles. He authored a report that gained traction earlier this year calling automakers to the carpet to do more to address the threats.

Fiat Chrysler was eventually forced to recall some 1.4 million vehicles by the NHTSA, which marked the first time a recall was enacted due to a hacking threat. (The fix is available via a download or by going to an authorized dealer.) Since the *Wired* piece, car hacking stories have been coming out of the Ethernet. One exploited a vulnerability in GM's OnStar app the automaker quickly moved to address. Others tore into a Tesla's dash, ultimately finding a way to wirelessly connect to it. (Tesla quickly rectified the issue.) Another team figured out a way to access a car's CAN Bus (the way a car's electronics talk to each other) by text message through an aftermarket dongle plugged into the diagnostic port.

I recently spoke with Mathias Halliger, a principal engineer for Audi AG's MMI systems, about hacking. Audis have been connected for several years now. Halliger is confident Audis are secure, as it has been a focus for his team, but he admits, "We're not arrogant enough to think that [a hack] couldn't happen."

At the end of "WarGames" the computer learns the futility of war by playing tic-tac-toe, and the humans learn the importance of maintaining control. So is it time to panic and start buying cars from the analog era? Hardly. But what the recent spate of hacks has exposed is that automakers need to tighten up their security ASAP. Because in-car connectivity is here to stay, and you better believe the bad geeks aren't going to settle for a nice game of chess.

Are you concerned by hacking threats? Let me know at [letters@automobilemag.com](mailto:letters@automobilemag.com). ■

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# Ignition



ART AND THE AUTOMOBILE / CUMBERFORD /  
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COURTESY THE SOLOMON R. GUGGENHEIM FOUNDATION / ART RESOURCE, N.Y.

Danh Vo

**“Das Beste oder Nichts”  
2010**

The engine of the artist's father  
Phung Vo's Mercedes-Benz  
26 x 40 x 81 in



**f there's nothing unique about the filthy Mercedes-Benz engine sitting on the clean, white floor of the Guggenheim museum in New York, why did artist Danh Vo put it there?**

Vo and his family fled Vietnam as refugees in 1979 and found asylum in Denmark, where Vo later attended the Royal Danish Academy of Fine Arts. In 2010, Danh tore the engine out of a Mercedes-Benz 190, the car his father bought as a rolling reminder that he'd made it in the West, then dragged the grease-covered block into the Guggenheim and transformed it into art.

Art and the automobile have a longstanding relationship that's sometimes straightforward, sometimes abstract. Defining what art is will always be nebulous, but what we can do is distinguish between art and design. Cars are exhibited in major museums all over the country, such as New York's Museum of Modern Art (MoMA). Senior deputy curator Peter Reed put on a show in 2002 called “AUTObodies,” highlighting some of the most significant car designs in automotive history. “A designer sets out to solve a problem, and really good design is innovating new ways to solve that problem,” says Reed. “But art is liberated from all that; it's not about utilitarian function. Art is about intention and communication.”

Artists use cars to communicate because automotive language is one we all understand, and the cult of car culture has long inspired artists to create thought-provoking pieces in many different media and styles.

The sheer volume of great automotive art being made today is a body of proof that cars are more than appliances. They want to be driven, to be part of our lives. An old engine might not mean much on its own, but its soot tells the tale of a man's commitment to make life better for his family. Cars have stories to tell, and we appreciate the artists who are willing to listen. ■

# An Engine at the Heart of Art





**Jay Koka**

**“Graffiti,” 2013**

Koka captures the sharp and brutal character of the Corvette Stingray. “Car design is so clean and thought-out by committee that I wanted to contrast it with the rambunctious individuality of graffiti,” says Koka. The sweeping, random energy of the graffiti mirrors the Corvette’s rowdy attitude.



**Guy Allen**

**“Lotus Elise,” 2010**

Allen’s comic-strip composition and cartoonish style heighten the sense of drama as you move from panel to panel. This aesthetic has its roots in ‘60s pop art. We imagine ourselves as the shadowed driver in the middle panel, driving the Lotus Elise through a corner, its suspension fully loaded, its tires screaming bloody murder.



**Adrian Mitu**

**“Aventador,” 2014**

Mitu (who paints under the sobriquet Aquarelief) used his morning coffee to draw the cars in his “Morning Coffee” watercolor series. His freshly emptied cup and brush, included in the presentation, are the tools of a passionate daily ritual. What started as a spill became a jolt of ingenuity.



**Gerry Judah**

**Untitled, 2015**

Judah made this 130-foot-tall double-helix sculpture for Mazda to show off at this year’s Goodwood Festival of Speed. Atop the twisting steel structure are the rotary-powered, 1991 Le Mans-winning 787B race car and Mazda’s Vision Gran Turismo concept car, representing the past and future of Mazda’s motorsports and design heritage.

# Oil and Paint

Automotive art lives a vibrant life all over the world and across many media—from sculpture to painting, photography, and printing. The best art forces us to look at some of our favorite cars in new ways.





### Chris Burden

#### **“Porsche With Meteorite,” 2013**

The 1974 Porsche 914 here was one of many classic cars that made up the late Chris Burden's personal collection. He balanced his Porsche on a scale with a 400-pound meteorite, a relationship he found uncanny. “There was some sort of weird relation between the nickel iron in the meteorite and the Porsche,” he told the New York Observer in 2013. “A really good German craftsman, with a good hammer, could make a really great Porsche out of that meteorite.”

### Fabian Oefner

#### **“Disintegrating, No.2,” 2013**

To create the exploding images of classic sports cars in his “Disintegrating” series, Oefner deconstructed vintage scale models with obsessive precision. He snapped thousands of photographs of individual components that he then assembled in Photoshop to create a single image, such as this one of a 1967 Ferrari 330 P4. “There’s an enjoyment in the analysis, discovering something by taking it apart,” says Oefner. “Like peeling an onion.”

### Markus Haub

#### **“188 – Ford GT40,” 2011**

Melding digitally altered photography with bleeding streaks of color, printed text, and various varnishing methods, Haub's Ford GT40 has a sense of controlled chaos that manages to make a popular subject feel new. The main images for the mixed-media works in Haub's “Racing Legends” series come from photos he takes at vintage car events throughout Europe.





**AM: How do you conceive a design for each car?**

**LG:** When people commission me to make a car and ask what I'm going to do, I say that it's not up to me. It's whatever the car wants to be. One time I designed a woman's Ford Focus like an aquarium filled with fish, and she loved it.

**AM: Explain how a car knows what it wants to be.**

**LG:** Every car has a story and a history. Every car has an alter ego, and deep down they all want to be different. Most of today's cars are just boxes. Imagine a beautiful world where every car on the road is unique and has its own personality.

**AM: How does a car speak to you as an artist?**

**LG:** The design somewhat dictates what the result is going to be. I have to be like a golfer, working around the course, maneuvering and finessing around the terrain of the car to make my best approach. Every car presents its own challenges.

**AM: Were you always a car guy?**

**LG:** I grew up in the car culture of New York of the 1960s. My father bought a Chevy Nova station wagon for \$2,000, and in those days, even basic transportation had interesting style. We later got a used 1963 Cadillac that just blew my mind.



**AM: What are some of your favorite cars?**

**LG:** I first fell in love with the Jensen Interceptor convertible and the bug-eye Austin Healeys. These days I like the aggressiveness of supercars, so I'm drawn to Pagani and Koenigsegg. They're adventurous and emotional.

**AM: Would you rather take an exotic and build on its personality or discover something unseen about a regular car?**

**LG:** Well, do you root for the underdog or the heavy hitter? I love supercars, but you can take anything mundane and make it fantastic. I've taken my own Chrysler 300 and added a paisley print, and it outshines Bentleys. Art is the great equalizer. A car needs to still be functional, but art can make it elegant and beautiful. I know I could make a Honda that would give an Aston Martin a run for its money.

**AM: What is your goal with an art car?**

**LG:** Great art turns the world into a more conscious world. Maybe if a Hyundai Sonata drives by with some vibrant art on it, somebody will wake up. ■



This is Gartel's latest art car, a tropical-themed 2007 Mercedes-Benz SL65 AMG commissioned by Florida-based tuner RENNtech.

# Alter Ego

The automobile is part of our visual landscape, and many people are totally desensitized to its presence. Laurence Gartel wants to change that, one vehicle at a time. As part of the digital art movement, Gartel uses multicolored vinyl wraps to create psychedelic art cars.

# HOLDS SEVEN WITHOUT HOLDING BACK.

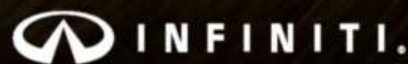
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# Art and the



audio guide to the exhibition. The choose-your-own-adventure audio experience responds to your location within the exhibition space as well as the movements of your head and body. It's kitschy, but this experience shows the healthy relationship between an automaker and a cultural institution.

## THE BIG THREE RESCUE A DETROIT ICON

In the wake of Detroit's very public bankruptcy, there were



**I**f automotive art is all about using the language of cars to communicate, what happens when the original manufacturers have something to say? Companies often turn to artists to act as their voices and find new ways to connect with their audiences. Whether it's Charles Sheeler photographing Ford's industrial infrastructure in 1927 or Andy Warhol making prints of historic cars for Mercedes-Benz, people worry that involving a corporate entity renders art contrived and inorganic. The reality, though, is that somebody had to pay Michelangelo to take his brush to the Sistine Chapel ceiling. Here are some of the most prominent examples of automakers working with artists today.

# Automakers

## "INSIDE ROLLS-ROYCE"

Rolls-Royce is opening itself up and letting fans look at what it takes to produce some of the world's most extravagant and luxurious automobiles. The traveling exhibition presents Rolls-Royce's manufacturing process, sharing magnificent details and highlights through a variety of sensory experiences. A digital screen displays the 44,000-color Rolls-Royce paint palette. One room is dedicated to the smell and feel of natural wood. Another area is devoted to varieties of high-quality leather. The most compelling component of "Inside Rolls-Royce" is a video wall that displays the trademark Spirit of Ecstasy mirroring your every move. After visits to Los Angeles, London, and Dubai, the show is currently touring through China.

## VW TECH IN MoMA'S BJÖRK RETROSPECTIVE

MoMA integrated technology from the Volkswagen Electronics Research Lab (ERL) into a recent Björk retrospective. Silicon Valley-based ERL adapted its Sound Journey technology, which generates audio data based on steering wheel angle, throttle and braking application, and vehicle speed, to help create an interactive, smartphone-based

fears that the city-owned Detroit Institute of Arts (DIA) would be forced to sell off its collection. That didn't happen, due in large part to donations of \$10 million each from Ford and General Motors, as well as a contribution of \$8 million from Fiat Chrysler. It's fitting for a museum that hosts a highly regarded work of automotive art, Diego Rivera's "Detroit Industry" murals, which depict workers at Ford's River

Rouge plant in the early 1930s. Those murals, by the way, were paid for by Edsel Ford.

## THE "UNSTOPPABLE SPIRIT"

Land Rover chief designer Gerry McGovern commissioned Italian artist Nino Mustica to create a sculpture of the all-new Discovery Sport that articulated the more emotional side of automotive design. "There is no doubt that all beautiful, functional, and elegant objects stimulate creativity," says Mustica. "This work is a fascinating exploration of how these worlds collide and interact." "Unstoppable Spirit," which debuted last fall at the Southbank Centre in London, is an example of the artist and designer finding natural commonality through aesthetic abstraction. ■



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BY DESIGN

# BMW 3.0 CSL HOMMAGE CONCEPT



## What's a BMW supposed to look like?



B

**efore Albrecht Goertz** drew the brilliant 1956 BMW 507 roadster, no BMW held any aesthetic charm for me. The 328 roadsters of the late '30s were mechanically interesting, but they were also stubby and dumpy. The big 501 sedan of 1952 (the first car sold by BMW after World War II) contributed its hardware to the 507, but it was a frumpy machine with little charm apart from the 502 variant being the first postwar car from Germany to get a V-8. BMW was on its way out of business in the '50s (due in part to the expense of building the 507) until Herr Herbert Quandt bought control in 1959 and brought in foreign stylists, initially Giovanni Michelotti, who shaped the 1960 Corvair-inspired New Class compact sedans that saved the company.

At the beginning of the '70s,

Frenchman Paul Bracq created the initial look that ultimately led to the shapes of the 3, 5, 6, and 7 Series. Bracq was always frustrated by the aero drag from the “motorboat” front ends that BMW management insisted on preserving from Michelotti’s design for the New Class. Good as they were, Bracq’s cars were the epitome of the “one sausage, many lengths” school, and this design approach was stifling BMW before Chris Bangle took charge in 1992. The truth is that Bangle’s cars handsomely outsold their predecessors, however much the press and even some BMW execs might have complained about their radical appearance.

These days there are three touchstones for BMW style: the “double-kidney” grille (first seen in the early '30s and then transformed in the '50s by

Goertz into its present horizontal format); the rear quarter-window “kink” (an element created post-Michelotti by Wilhelm Hofmeister); and complex sheetmetal surfaces (created by Chris Bangle, although the so-called Bangle Butt of the 2002 7 Series was actually imagined by Adrian van Hooydonk for the 1999 BMW Z9 concept car). Hofmeister’s identity mark and the twin grilles will endure in perpetuity, and I suspect the extraordinarily imaginative skin shaping first exemplified in Bangle’s “flame surfacing” will also persist as long as BMW does.

It’s all present on the BMW CSL Hommage concept, along with a mild dose of nostalgia that just manages to avoid the taint of being excessively retro. Recapitulating the paint stripe

of the 1972 CSL on a hidden surface is both visually striking and amusing. The aero-strake overlays on top of the fenders, so cleverly integrated into the overall body form, emphasize that this new CSL is an organic composition, while the '70s CSL coupes were an agglomeration of scoops and wings brutally tacked on to the body.

I’ve enjoyed BMW’s several “hommage” cars. (J Mays, former Ford designer, called this approach retrofuturism.) They have provided a way for successive BMW designers to integrate the entirety of the firm’s past production into a coherent stylistic whole, and this CSL even includes the trucklike grille from BMW SUVs. Not all BMWs are great-looking, but the totality of what has been produced is definitely well on the positive side of the ledger.

## FRONT 3/4 VIEW

**1.** Slim little slots for admitting cool air are not as dramatic as the rectangular boxes stuck on the sides of the '70s CSLs, but they're certainly far more elegant.

**2.** This slat across the back of the roof that diverts the aerodynamic boundary layer might be a near-perfect crib of the original CSL, but it was cool then and it's still cool today.

**3.** Another cool touch is the centrally mounted, racing-style single wiper blade, always available for action.

**4.** Aero strakes recall those on the CSL of yore. And who knows? They might actually have some useful aerodynamic properties.

**5.** To me, this too big, too coarse, and SUV-like grille is the least attractive element of the CSL Hommage.

**6.** The eyebrow slots separating the fender overlay from the underlying body suggest that the tires and engine compartment might be exposed under the added skin.

**7.** A nice evocation of the truncated round headlamps from a decade or so back, with LED running lights added artfully.

**8.** Presumably these un-grilled diagonal slots are for brake cooling. They look effective, anyway.

**9.** Six inverse louvers look like a detail from the '30s, their function obscure in this context.

**10.** Textured inlet slots under the paint break plus the round grilles outboard

imply enormous internal airflow requirements.

**11.** Two simple, round exhaust stubs from the old CSL have been subsumed into an elaborately styled finishing piece that's more Cadillac than race car. But this is a GT, right?

## REAR 3/4 VIEW

**12.** These wheels seem a bit too froufrou for a serious performance car, but they show the huge brake discs nicely.

**13.** No question, this is pre-nostalgia but very nicely executed and properly evocative.

**14.** I love the trick of painting this traditional stripe on the underlying body then covering it with appended but nicely integrated fender skins.

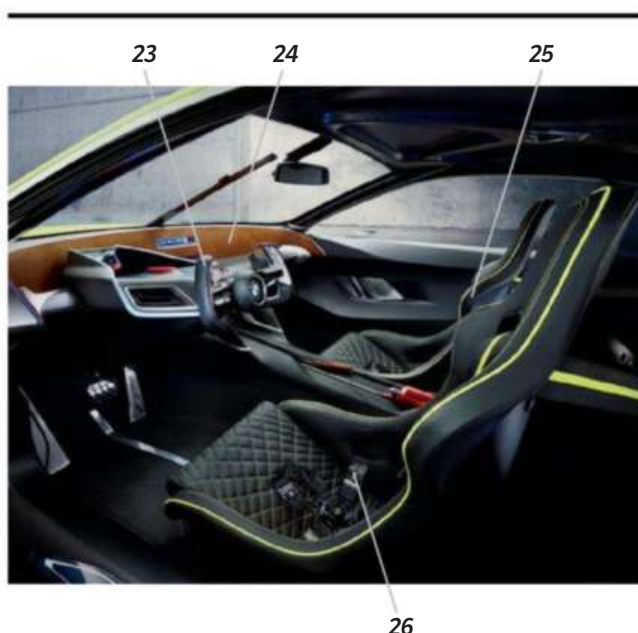
**15.** Making the leading edge of the rear fender into a point derived from the slim slots that separate the fender from the body is quite elegant, especially in pure side view.

**16.** A much-admired quarter-window profile. It looks absolutely right only on a BMW, though. (Designers of Asian cars, please note.)

**17.** Incorporating the fins and wing into beautifully modeled surfaces respects modern sensibilities as well as the spirit of racing-style modifications of the '70s.

**18.** The black bumper is no doubt a regulatory requirement, but it also punctuates the sharp surface change nicely while framing the CHMSL.

**19.** The fluid forms of rear lamps that surround an air channel through the



body must have been really fun to draw and then to model. They must have been hard to make, though.

**20.** Differential cooling? Appropriate for a racing car. There are far fewer square inches of outlet area on the back of the car than for the inlet area at the front.

**21.** This hard line describes the entire perimeter of the rear face, with a slightly less hard parallel line running just inboard. Altogether it looks like it would be a sensual pleasure to wash this car, with its many softly rounded surfaces.

**22.** Why this outlet is present is not obvious. Styling, engineering, or both?

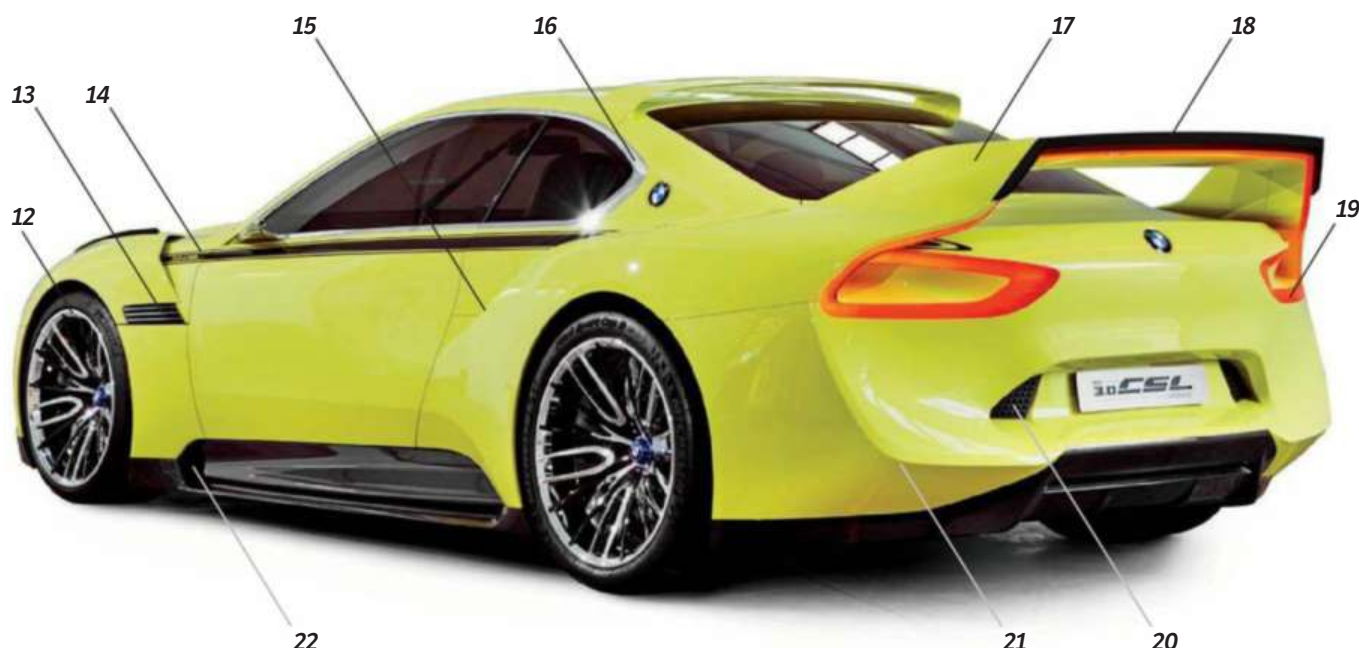
## INTERIOR VIEW

**23.** Airplane- and F1-style steering yokes surely must come to street cars, but will they arrive before all steering becomes autonomous?

**24.** More Hommage homage, this time to a swath of wood, as in the '70s models.

**25.** The seats are magnificent in contour, trim, and comfort. If you're exactly the right size, that is.

**26.** It's nice to see five-point racing belts, although they'd be a real pain in a road car. ■







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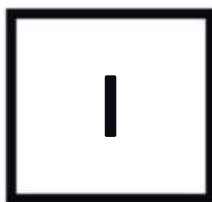
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THE ASPHALT JUNGLE

# HEART A TAX



## IF YOUR KID CAME HOME

from high school with a big fat “D” on his French test, what would you do? That’s right: You’d grab him by the Xbox and march him straight back to Madame Merdealors until he fully understood how to get his “oui oui” back on track. Well, in its most recent “Report Card for America’s Infrastructure” (2013), the American Society of Civil Engineers graded our country’s roads with a big fat “D.” And what are we and our exalted elected officials doing about it? Pretty much nothing.

America’s roads are so bad—and have been so bad for so long—today’s motorists have apparently reached terminal apathy. Mention the potholes, the collapsing bridges, and the traffic snarls due to unimproved byways, and most will shrug it off with a listless, “Hey, that’s the way it is.”

This is not the America that finished the Panama Canal and landed the Eagle on the moon.

Don’t look to Capitol Hill for answers. Neither most Democrats nor most Republicans want to do the right thing. As I write this, Congress has just passed a stopgap measure to keep the Highway Trust Fund solvent for another three months. At that point, the unlikely alliance of Sen. Mitch McConnell, R-Ky., and Sen. Barbara Boxer, D-Calif., will try to pass their 1,000-page compromise bill to boost highway spending over the next three years and set transportation policy through 2022.

While I applaud the bipartisan attempt to do *something* about that ugly “D” grade blighting our roads, in truth the bill is little more than a shell game—you could even call it smoke and mirrors—to shuffle funds around until a little spills into the highway-funding pool. Among its other “brilliant” concepts to dig up funding, the bill proposes to expand the power of private debt agencies to collect taxes (I foresee a new opportunity for Dog the Bounty Hunter) while also raising \$9 billion by selling off 101 million barrels of oil from our Strategic Petroleum Reserve—roughly 15 percent of the total. To me, this makes about as much sense as eating your earthquake-survival provisions because you’d rather not go to the store.

At the risk of bringing up a reality akin to “this hypodermic needle is gonna hurt,” I have a proposal that doesn’t require 1,000 pages—or even one full page. I can write it on a scrap of paper using only a single sentence.

Raise the gas tax.

I can already hear the cries of “Of course St. Antoine doesn’t care if pump prices go up; he drives shiny test cars fueled by a corporate gas card.” Nope. Apart from the infrequent road tests I write these days, I pay for my own cars and my gasoline out of my own pocket. But I’m perfectly willing to spend a little more to enjoy first-class roads, new and improved traffic arteries, and reduced congestion. Every one of us who drives would benefit, no complicated funds-juggling or confusing legal loopholes required.



The federal gas tax of 18.4 cents per gallon hasn’t increased since 1993—largely because even suggesting such a thing, most lawmakers believe, is political suicide. Yet not only is total tax income dropping relative to inflation, it’s being steadily shrunk by the reduced consumption of today’s increasingly fuel-efficient cars. Upping the gas tax is a win-win. Those who use roads the most would pay the most and also benefit from a vastly modernized driving infrastructure. At the same time, higher fuel prices remove incentives for unnecessary road trips. They reduce traffic, pollution, and, yes, additional road wear.

Does such a proposal soak people who struggle to pay for gas even at its relatively low current prices? Hardly. Increasing the gas tax by, say, just 20 cents per gallon, potentially generating billions in road-repairing funds, would raise the average cost of a tank of fuel by only about \$3. That’s one fewer mocha-soy Frappuccino a week. What’s more, an increased gas tax could very well *reduce* the average motorist’s annual driving expenses. A 2015 report by the national research institute TRIP estimates that poor roads cost drivers as much as \$1,000 a year in vehicle damage, added fuel costs, and productivity lost to delays. That’s an annual loss of \$109.3 billion nationwide.

Let me put the whole conundrum another way: Think the typical high-school student wouldn’t pay \$3 a week to get an “A” in French? ■

ILLUSTRATION BY TIM MARRS

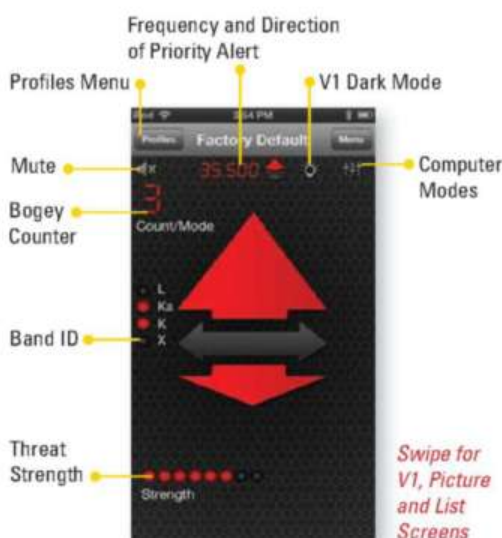
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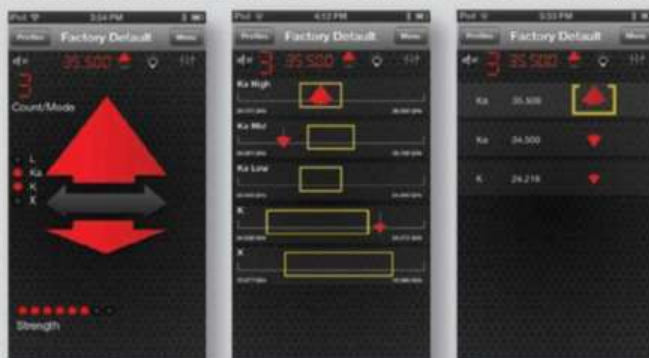
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# CROSS(OVER) MY HEART AND HOPE TO DIE



A

## AMERICA'S CAR-SELLING BUSINESS,

praise God, is pretty much in full recovery mode now, with some analysts and manufacturers predicting annualized sales for 2015 in the neighborhood of 17.5 million cars. Which will be near an all-time record and quite a

swanky neighborhood when you remember that as recently as 2009 the industry considered itself lucky to shift 10.4 million cars in the U.S. for the whole year. From that nadir, sales are up close to 70 percent.

Profits are up, too, as is employment. Share prices are up, executive compensation is way up, and amid the general exuberance, memories of the bad times—the government bailouts, lost brands, devastating layoffs, defunded pensions, plus the cruel, underlying recession itself—are fading in the industry's

are conveniently ready, willing, and able to sell them, while purchases of ordinary passenger cars are said to be languishing. It would be churlish and downright un-American to chastise the industry now. As fans of cars domestic and foreign and fans of economic vitality, surely we must cheer for our heroes now that they are back in the saddle once more.

And yet ... there is, it is true, no "I" in "team." But there is "me." And methinks that the current state of affairs is getting close—not identical, but close—to the bad old days, when people were encouraged to buy more car, by weight, than they really needed, because people think bigger cars are worth more money when in fact, as a matter of objective reality, they are simply more profitable to build because people readily pay a premium for size, weight, and height.

The general public also thinks crossovers are more practical, which is not always the case, and more capacious, which is also often not so. When compared to the cars upon which they are based, today's crossovers are, however, almost always less fuel-efficient and potentially more expensive to fix, and as a matter of basic physics (though much improved thanks to the advent of electronic chassis aids) they handle less ably than lower, lighter cars. They also take the trend of not being able to see out of your car, especially behind it, without the aid of cameras and other electronic assistance to its illogical extreme.

Back in the '90s and after the 2001 terrorist attacks, some—this reporter included—decried the industry's decision to focus, with the active assistance of the U.S. government, on selling large SUVs to people who didn't really need them. When criticized, the industry would always shrug its collective shoulders and plead that it was only giving people what they wanted, as if the billions in aspirational marketing, zero percent financing, and the willful suborning of mistruth (You're safer in a Hummer!) played no part in what became a tectonic shift in American buying habits. Today, we journalists are told, it is really the Chinese market and this newly minted cash bonanza's insatiable taste for size and the imagined prestige that comes with it that are to blame for the ever-multiplying array of large and vulgar monstrosities being spit out by the world's automobile factories.

Yes, but. The American industry was there in the thick of it helping craft the Obama administration's flawed new CAFE laws, which paradoxically encourage the manufacture of larger crossovers and SUVs. Because this country has no sensible energy policy and its legislators show no inclination to discourage petro-waste and profligacy by taxing petroleum products the way the rest of the world does, interludes of cheap gasoline are always going to push fuel economy down American shoppers' lists of primary concerns.

rearview mirror faster than the CD players that until recently graced new-car dashboards. Give the people what they want, not what they don't want. That's the mantra.

But what do the people want? With gas prices low and incentives high, the industry insists a growing percentage of buyers are demanding crossovers and light trucks, which they



So we find ourselves asking again: Must industry cater to the lowest common denominator, to the reptilian brain inside men and women whose judgments are under-informed, simplistic, and knee-jerk? Where does personal responsibility end and corporate responsibility begin? Whose fault is it that so many Americans are overweight and unhealthy? Is it merely that half the population lacks willpower and judgment? Or does part of the responsibility lie with the people who exploit human beings' limited impulse control and general inability to make sensible choices, whether by saturation advertising aimed at showing how their establishment offers a bunch of drunk people unlimited bread sticks and bottomless cheesecakes for a special low price or lulling them into thinking too large and too thirsty vehicles transform their sedentary fat selves into adventure-loving action figures?

Thing is, with a crossover, they don't even have to upsell you on extra profitable sugary drinks and high-calorie cocktails. Because they make their money on the way in. Consider, among countless possible examples, the Nissan Rogue. It probably costs a thousand dollars more to manufacture than Nissan's small car, the Sentra, if that. But, at a base price of \$23,925 for a barebones front-wheel-drive example, it's already \$6,000 more to buy than an equivalently denuded Sentra, and that's before you add the AWD that would at least provide some theoretical justification for its jacked up chassis. Now in fairness, the Rogue is pretty fuel-efficient by crossover standards, only a few mpg off the Sentra's number. But mountains have been moved and billions spent to save 0.1 mpg, much less 2, 3 or 4. There are far worse offenders, but it's no wonder Nissan



loves selling Rogues more than Sentras. Indeed, with July Rogue sales annualized to a 300,000-unit-a-year rate, they're breaking out the Tennessee sippin' sake in Nashville.

Once they assured us that the American public demanded tailfins and cars that were forever growing lower, longer, and wider. Today, they tell us, people like a command driving position so they can see over traffic. But of course they can't see over traffic anymore because everybody else is riding so high these days, too. Taller, longer, and wider is the fashion now.

## MUST INDUSTRY CATER TO THE LOWEST COMMON DENOMINATOR, TO THE REPTILIAN BRAIN INSIDE MEN AND WOMEN WHOSE JUDGMENTS ARE UNDER-INFORMED, SIMPLISTIC, AND KNEE-JERK?

And anybody who thinks public opinion drives fashion in the first instance isn't paying attention. Talk to people about what they want, and it turns out it is never unrelated to what they're being sold. And, of course, what many of them also want is free porn, free booze, and OxyContin suppositories. Should we give it to them? If it'll sell more cars, maybe. ■

ILLUSTRATION BY TIM MARRS





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# THRILL DRIVERS LIKE LE MANS, ONLY IN A CHEVY CAVALIER



T

**HANKS FOR YOUR INVITATION TO READERS AFTER**  
your Le Mans trip to recall our own memorable  
driving moments (“Editor’s Letter,” September

2015). In 1992 I was 16 years old and felt very lucky to be driving a Chevy Cavalier RS. On a summer evening while out driving alone, I decided to test the obvious muscle of my car on a rarely traveled road in West Omaha. As I approached my high-speed goal, the engine gasped for air and the car started to dance slightly as the nose began to lift. Then the reality of my car’s RS moniker being all emblem and no substance finally landed in my brain. As I took my foot off the gas for the long coast down to legal speed, I took special note of the significance of the event. Crappy car or not, you never forget your first trip to 100 mph.

**DAVID PATTERSON**  
Omaha, Nebraska

## MORE MEMORIES

It was the mid-’80s at the Detroit Grand Prix, and I was working as a volunteer gofer in the F1 garage. Renault F1 driver Alain Prost came down into Turn 14 and shunted into the barrier. He jumped out of his car and came running over to me on my scooter. He yelled, “Can you take me to zee peets?” Weaving at breakneck speeds through the stalled traffic on Jefferson Avenue, he was yelling, “Faster, faster! I must get to zee

peets!” Somehow we made it to the pit entrance without crashing. He bounded off the scooter and then something happened that I will never forget. He stopped, turned around, looked at me, and said, “Thank you.”

**HERBERT HUMMER**  
Toledo, Ohio

As a longtime F1 fan, I just took a drive in the Benetton B198 Judd from Allen Berg Racing School. Yes, it was expensive. Now the hard part; I am considering

doing it again. Who wouldn’t want to relive your best dream over and over?

**DALE LAUDERBACK**  
Via Internet

When I went back to graduate school to pursue a Ph.D., I decided that a Chevy Vega Kingswood Estate station wagon made more sense than the 1970 Corvette convertible I’d been driving in local SCCA events. Then I replaced it with another one with a four-speed

manual transmission. Equipped with Konis and Gabriel air shocks, I was using it to teach high-performance driving to police officers, notably a high-speed hand-brake turn. Later in an autocross, I used my training skill to make a precision 180-degree hand-brake turn at speed at the end of the lap and went through the timing lights backward. Everyone cheered.

**BOB McELROY**  
Lady Lake, Florida

Even after later national recognition in SCCA club racing, I remember the way my old friend W. Ryland Mills III helped me get a 10th place finish out of 72 entrants even though I started dead last. One of my smallest but sweetest victories.

**KEVIN JAMES**  
Marietta, Georgia

After seeing the Indianapolis Motor Speedway from various perspectives since 1959, especially the tragic 1964 wreck in which Eddie Sachs died, I did the Richard Petty Driving Experience there in 2001. My best lap was 146.7 mph, identical to Eddie Sachs’ pole-winning speed in 1960.

**JIM KROEGER**  
Fairlawn, Ohio

My greatest memory behind the wheel came in a 1966 VW Bug with the back seat folded down. (We got married later.)

**PETER TUTTLE**  
Via Internet

## SMART CARS FOR 2016

I believe that I have seen the only clearly rational use of the Smart Fortwo (“New Cars 2016,” September 2015). In Minneapolis-St. Paul, Car2Go has a fleet of identical white-and-blue rental cars. When they are parked on the street, an agreement with the parking authorities relieves renters of parking fees. The location of the cars is searchable on the Internet.

**BRUCE PARKER**  
St. Paul, Minnesota

You guys just don’t get it. The whole concept of not having more than you need is lost on most of the general public. I live in a 550-square-foot studio with my wife, Tamera, and the Dulce (a shih tzu). We have one assigned parking

space into which we can get both Smart cars. I love big horsepower cars like everyone else, but they're useless in day-to-day life in the city.

**KURT KLARICH**  
Phoenix, Arizona

Why buy a Smart instead of an overpriced Beetle, Fiat 500, or Mini? Because it is different. Have you ever seen the video of the Smart with the Suzuki Hayabusa engine conversion?

**ALPHONS VANDEN BRAND**  
Tampa, Florida

### TIMELESS BEAUTIES

Angela Dorian is in prison for shooting her husband ("The 36-24-35 AMX," September 2015)? Maybe she was aiming for the car and missed. I would have shot myself rather than be seen in that thing.

**JOE GWOZDZ**  
Via Internet



I share Mr. St. Antoine's chagrin over not getting the jet cars we were promised, as per "The Jetsons" ("The Asphalt Jungle," September 2015). We'll just have to settle for Rosie the Robot.

**ROGER FRANSSON**  
Wheat Ridge, Colorado

The Glickenhaus SCG 003 is unbelievable ("By Design," September 2015). I finally have a reason to sell the Vector W8.

**JONATHAN MILLER**  
Boone, North Carolina

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# Driven



PORSCHE BOXSTER SPYDER / DODGE VIPER ACR /  
MINI JCW / CHEVROLET VOLT



## THE MEMBERS ONLY BOXSTER

ZUFFENHAUSEN, GERMANY

P

orsche likes to introduce back-to-basics, hardcore variants toward the end of a model's life cycle. It's the company's way of nodding to its true believers and saying, "We still love you." Or, if you're more cynical, it's a way to squeeze those avid enthusiasts one more time before the process starts all over again with an all-new car. Either way, we approve because it's gotten us the new Boxster Spyder.

The most recognizable element of the Spyder is its manually operated top, which looks rather nice, can be put risk-free through an automatic car wash, will tolerate 180 mph without coming loose, and weighs 24 pounds less than the push-button job on the regular Boxster. That's the good news. The bad news is you need fingers of steel to lift the large rear body panel, fold the top into a stack, and tuck away the two fabric fins. The last-generation Boxster Spyder ate



# Not a Cayman GT4 without a top, but still damn good

## THE SPECS

**ON SALE:** Now

**PRICE:** \$83,095

**ENGINE:** 3.8L DOHC  
24-valve flat-6/375 hp @  
6,700 rpm, 309 lb-ft @  
4,750-6,000 rpm

**TRANSMISSION:**

6-speed manual

**LAYOUT:** 2-door,  
2-passenger, mid-  
engine RWD convertible

**EPA MILEAGE:**

18/24 mpg (city/hwy)

**L x W x H:**

173.8 x 70.9 x 49.7 in

**WHEELBASE:** 97.4 in

**WEIGHT:** 2,899 lb

**0-60 MPH:** 4.3 sec

**TOP SPEED:** 180 mph

▼ The Boxster Spyder's 3.8-liter flat-six packs more power than the GTS' 3.4-liter engine. Colorful stitching and trim accents the interior, right.

knucklebones at an even faster rate, but you'll still panic when the weather changes.

Of course, what's really important about the top is what it signifies. It's a Members Only jacket that tells other Porschephiles that your Boxster has a higher-revving flat-six (45 hp more than a GTS), a lower curb weight (about 65 pounds less than the GTS), and a beefed-up chassis.

The Spyder's 3.8-liter flat-six musters 375 hp, only 10 fewer horses than the Cayman GT4. The engine is mated exclusively to a six-speed manual transmission. Compared to the 3.4-liter engine in the Boxster GTS, the Spyder has more punch, but the real difference is that unfiltered wail. The flat-six virtually pierces your eardrums above 120 mph. It heightens everything we love about Porsche's soon-to-be-dead naturally aspirated engines, including immediate throttle response, turbine-smooth running characteristics, and a willingness to rev its lungs out.

Dropping the clutch at 5,000 rpm produces just enough wheelspin to conjure a broad grin. When conditions are right, the sprint from 0 to 60 mph takes 4.3 seconds, which is a half-second quicker than the Boxster S with a manual and 0.4 second quicker than the stick-shift GTS.

The Boxster Spyder upgrades the suspension from the GTS model, adding new springs and dampers, quicker steering, bigger brakes, and more substantial 20-inch wheels. Adaptive transmission mounts and a torque-vectoring limited-slip rear differential come standard. All that is



a recipe for fantastic handling, yet the Spyder is not quite as razor sharp as the Cayman GT4, which got exclusive access to the 911 GT3 suspension parts bin. Still, when you shut off stability control, the spicy Spyder will perform the same sensational slide show as the GT4.

The Spyder can be ordered in very basic trim, without radio or air-conditioning (adding them back does not cost extra). Porsche spared no expense in our test car, and we marveled at miles of colorful stitching and trim with matching seat belts. Yet we also can't help but notice how quaint the nav

system is and how few driver-assistance systems there are for a car that starts at more than \$80,000.

No doubt, the next-generation Boxster and Cayman, which will likely be renamed 718, will address these technical shortcomings. For now, the Spyder celebrates and embellishes what makes a Boxster a Boxster. Whether that embellishment is worth a \$7,500 surcharge over the very good Boxster GTS, which comes with a better functioning top, probably depends on how much you believe in Porsche. ■





# Dodge's new ACR breathes fresh life into the Viper



## AIR STRIKE

**P**ity the poor Viper. Ever since Dodge last year introduced the Hellcat Charger and Challenger—a 707-hp sedan and coupe usable as daily transportation and costing about \$65,000—the Viper, with (cough) just 645 horsepower and a base price of about \$85,000, seems almost irrelevant. Dodge had to discount the Viper to that price just to sell close to 100 per month while Hellcats fly out of dealerships at a premium.

However, the supercar strikes back with the 2016 Viper ACR, which is, in a word, astounding. Few cars walk the thin line between “street legal” and “track only” with more success. We weren’t able to get numbers during our laps on Virginia International Raceway’s longest circuit—more than 4 miles—but I’ve never driven a street-legal car

so precisely adapted for track duty.

Aerodynamics is the name of the game. The massive rear wing, adjustable front splitter, and dive planes produce 1,533 pounds of downforce (and associated drag) at the ACR’s top speed. With the Extreme Aero package, including an even more aggressive dual-element rear wing, a bigger front splitter, and other add-ons, top-speed downforce increases to 1,710 pounds. As a result, Dodge says, terminal velocity is 177 mph compared to the base car’s 206 mph.

That’s not to say you’re likely to see slower trap speeds on most road courses. I’ve hit 145 mph in various Vipers over the years on VIR’s longest straight, and since the ACR has the same 645-hp, 8.4-liter V-10 as every other Viper—more power requires expensive government recertification, Dodge said—the fact we saw about 145 mph in the ACR makes sense. After all, the extra grip

results in higher cornering speeds, making you faster coming onto the straightaways.

Downforce is one of the three best things about the ACR. The other two: Custom Kumho—yes, Kumho—tires that should launch the brand as a legit supercar tire supplier and incredible, standard Brembo carbon-ceramic brakes. Lap after lap, the Kumhos and the Brembos—six-piston calipers up front, four pistons in back—don’t give up. You can use the very lightly treaded Ecsta V720 tires on wet pavement, but if you encounter standing water, expect to hydroplane into the next ZIP code.

Weight savings—lighter carpet; a “minimal three-speaker audio system,” Dodge says; thin, manually adjustable seats—do not make the interior into a penalty box. Alcantara is everywhere. The stereo still sounds decent and provides SiriusXM radio, navigation, and



A focused exterior is juxtaposed with a relatively cushy, Alcantara-clad interior, complete with Chrysler's fantastic Uconnect infotainment system.

## THE SPECS

### ON SALE:

Now

### PRICE:

\$122,490 (includes gas-guzzler tax)

### ENGINE:

8.4-liter OHV 20-valve V-10/  
645 hp @ 6,200 rpm,  
600 lb-ft @ 5,000 rpm

### TRANSMISSION:

6-speed manual

### LAYOUT:

2-door, 2-passenger,  
front-engine,  
RWD coupe

### EPA MILEAGE:

12/21 mpg (city/hwy)

### L x W x H:

175.7 x 76.4 x 49.1 in

### WHEELBASE:

98.8 in

### WEIGHT:

3,392 lb

### 0-60 MPH:

3.4 sec

### TOP SPEED:

177 mph

Bluetooth. There's A/C and power windows. Yes, the clutch is a little grabby, and the six-speed Tremec TR6060 manual transmission is a little finicky. But this transmission doesn't break, so you live with its moderate crudeness.

Coil-over, double-adjustable Bilstein shocks have 10 settings and raise or lower the car as much as 3 inches. Dodge plans to offer basic setup sheets for some sample tracks, with suggested suspension settings and tire pressures.

What's it like to drive? Spiritual, almost. You can brake so much later than you think. You can take turns so much faster than you

imagine, as the suspension and the stunningly good Kumhos work their magic. The wheels and tires are one place Dodge didn't try to save weight, because with all that downforce, they have to be beefy.

With 600 lb-ft of torque, the ACR launches out of corners almost indifferent to what gear you select. (First gear is good for 60 mph.) Spirited driving is pretty easy, as the ACR forgives you unless you dial out all of the five-level traction control. (Don't.) Brakes and steering are linear, and once you master the balky shifter, the average human can go pretty fast.

A balls-out ride with

development engineer Chris Winkler, a former racer with thousands of laps in Vipers, showed us just how fast this car is. I've raced in the now-defunct Viper Challenge series and driven plenty of the old ACRs, but my cut-parry-thrust ride with Winkler was the fastest I have ever been around a racetrack in a street-legal production car. He says this car is at least 5 seconds quicker than the last ACR. His estimate feels conservative.

Dodge's Hellcats are better at four-alarm burnouts, and the sound of a supercharged V-8 drowns out the Viper's V-10. But the ACR moves to the front of the line in pursuit of lap records. We'd add a rollcage—Dodge doesn't offer one, but cages for the last-generation ACR will fit—and consider at least a four-point harness mandatory, preferably six-point, because the standard belt does nothing to hold you in the seat under the drop-anchor braking. (Keep the three-point belt in the car for street driving; in some jurisdictions, racing belts are illegal.)

This is a serious, scary Viper, and we want one. Now. Dodge will be happy if it can sell 75 a year; 100, and it will be giddy. ■



BIG SUR, CALIFORNIA

F

rom San Jose, it's a drive of 120 miles to California

Highway 1, with its soul-stirring coastal cliffs, redwood forests, and a sparkling Pacific that extends into forever. Piloting the all-new 2016 Chevy Volt, I made it almost halfway on electric power alone. The EPA rates this car at 53 EV miles before the gas-powered "range extender" kicks in, but it's possible to stretch that a bit. In any case, 53 miles represents a 35 percent bump in EV range compared with the first-gen Volt. This is enough, Chevy says, so that

90 percent of owner trips will never light up the gas engine. Conceivably, an urban commuter might never have to visit a fuel pump at all.

If nothing else about the Volt had changed, the boost in EV range alone would merit uncorking a magnum of celebratory Moët. Well, better order that Moët in Nebuchadnezzar size because the second-gen Volt is way more than a better battery. If the outgoing car were a promising college quarterback, the new edition is Aaron Rodgers.

Mind you, Chevy's original Volt

impressed us plenty—enough that we voted the extended-range electric vehicle (EREV) our 2011 Automobile of the Year. Yet there were some pretty notable rough edges to the Volt: a center stack blighted with fussy capacitive-touch controls, just two rear seats (and an open space to the cargo hold between them), and hard-to-modulate regenerative brakes. "Part of the issue is that you're creating an entirely new type of car from scratch," says Pamela Fletcher, executive chief engineer of all GM electrified vehicles. "There are no precedents."

## GM's chefs cook up new electric range



The new Volt addresses every one of our original criticisms and succeeds on almost every front.

The headline news lies under the bodywork. There you'll find a new, 18.4-kW-hr lithium-ion battery pack that makes use of revised chemistry to increase efficiency and output while reducing its overall size. Also new is the 111-kW two-motor drive unit; it's smaller and lighter yet more powerful. The engineering advances in the new system are as dazzling as they are complex, but the many benefits include a 100-pound drop in weight and a 20 percent boost in battery storage

capacity. The Volt also uses fewer cells (192 versus 288). Torque output also has increased to 294 lb-ft, which cuts acceleration to 30 mph to 2.6 seconds.

The gasoline-fed range-extender engine is likewise new. It's a naturally aspirated, direct-injection, 1.5-liter four-cylinder making 101 hp. The engine is quieter than the previous unit, and, importantly, it now runs on regular unleaded. In EV mode, the Volt is rated at 106 EPA mpge combined; the gas engine delivers 42 mpg combined. Without a recharge, the Volt has a range of 420 miles, but Chevy estimates that owners who

recharge frequently will drive 1,000 miles or more between fill-ups.

As far as the way it looks from the outside, the revised Volt is a dramatic departure from the original. Everything is new. (Well, the trademark Volt logos ahead of the outside mirrors are the same as before.) There's a decidedly Civic-like arc to the body now. The hood has a lean, "windswept" design, and the tail tapers without adversely affecting rear cargo room. Overall, aerodynamics are vastly enhanced thanks to the sheetmetal itself, airflow-aware contoured taillamps, and a shutter system behind the front grille that

The new 8-inch color instrument display is configurable into four different themes to suit driver preferences. The gas range-extender engine starts up only when the green battery gauge shows full depletion.



## CHARGING AHEAD



automatically closes at highway speeds to block airflow and reduce drag.

Inside the cabin, Chevy got smart and realized that "conventional but simple" is better than "splashy but exasperating." In place of the old Volt's nasty touch controls are rotary knobs and simple buttons for the climate-control system—a massive improvement. Both the center-stack and driver digital displays feature larger, 8-inch screens; a rearview camera is standard. Options include heated rear seats, a heated steering wheel, and navigation. The new Volt is also the first GM car to offer Apple





CarPlay. Users of iPhones with Lightning connectors can access Siri Eyes Free text-message alerts, maps, iMessage, Apple Music, and, of course, the phone itself. I must admit that I was startled when Siri spoke up unexpectedly, offering to read me an incoming text, and I had to laugh when Siri started reading the text's included emojis aloud: "Clapping hands. Clapping hands. Clapping hands."

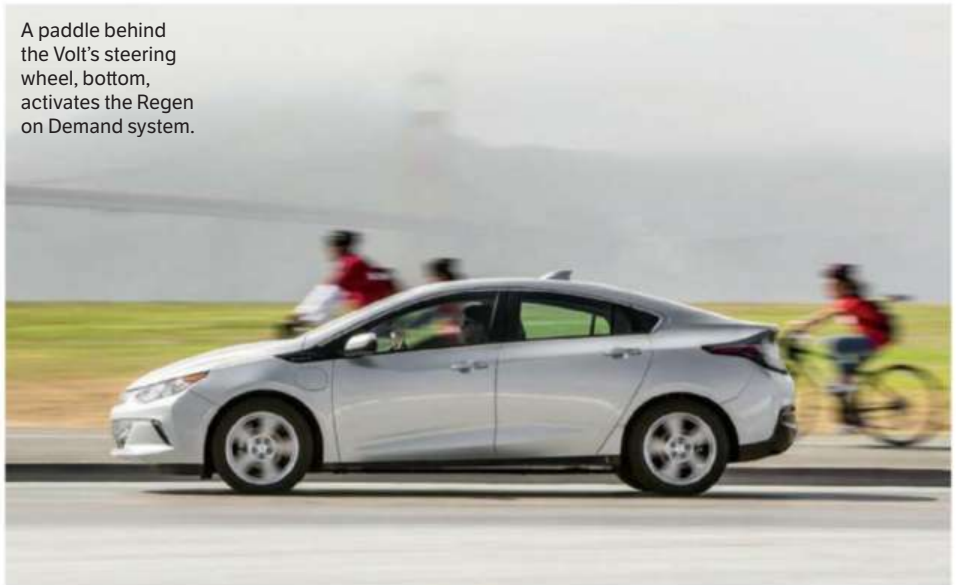
Also most welcome is a new rear bench seat that can accommodate three passengers in a pinch. Admittedly, the vestigial center spot is a penalty box. It's tight on headroom, and you have to split your legs around the battery box protruding from the floor. But for a quick run to the movies, it'll do.

Vehicle chief engineer Andrew Farah is justifiably proud of the brakes in the gen-two Volt. "We spent a lot of time on feel," he says. "I didn't want that 'regen' artificiality when you step on the pedal." Farah and team's efforts paid off because the new Volt's binders feel almost conventional. Big thumbs-up.

Also vastly improved is the steering response. Initial turn-in is surprisingly quick; shift the wheel slightly, and the front end takes a bite right now. There's decent feedback through the wheel too, but don't get your hopes up. Though it digs in early, the front end washes away fast. If not sporty, the driving inputs are at least pleasing.

When running on electric power alone, the Volt is uncannily quiet. This is when the 2016 Volt really shines. There's plenty of torque on hand, the car surges effortlessly up freeway entrance ramps, and you're aware of the lack of conventional engine vibrations. The ride has improved from the

A paddle behind the Volt's steering wheel, bottom, activates the Regen on Demand system.



## THE SPECS

### ON SALE:

Now

### PRICE:

\$33,995 (base)

### ENGINE:

1.5L DOHC 16-valve I-4/101 hp @ 5,600 rpm with twin AC 111-kW motor; 149 hp, 294 lb-ft (combined)

### TRANSMISSION:

Continuously variable automatic

### LAYOUT:

4-door, 5-passenger, front-engine, FWD hatchback

### EPA MILEAGE:

42 mpg/106 mpge (gas/pure EV mode)

### L x W x H:

180.4 x 71.2 x 56.4 in

### WHEELBASE:

106.1 in

### WEIGHT:

3,543 lb

### 0-60 MPH:

8.4 sec

### TOP SPEED:

98 mph



first generation too. As before, four driving modes are available: Normal, Sport, Mountain (in which motor and engine combine output for climbing steep grades), and Hold, which switches the car to extended-range mode to save battery juice. There's also a nifty paddle behind the left of the steering wheel (just like a shift paddle) that activates Regen on Demand. Simply pull the paddle (say, when heading downhill, approaching a stop sign, crawling through stop-and-go traffic) to activate the Regen system without having to step on the brake pedal.

The system is surprisingly entertaining to use. Driving through a section of twisties, I found myself "left-hand braking" for many turns where I just wanted to erase a little speed.

After the battery is fully depleted, the gas engine will start up to refresh the battery and keep you going for more than 350 additional miles. The experience in extended-range mode isn't as enjoyable as pure electric, largely because you can now hear and feel the gas engine and, more important, because there's that same mismatch of vehicle speed and engine revs you feel in cars with a continuously variable transmission. There you are accelerating, and yet the engine note is steady, not climbing at all. Or the engine suddenly revs up and you're not moving. It takes some getting used to.

The new Chevy Volt is a gargantuan leap forward. Not only is it far better than the original, but it's also cheaper. Base price is \$33,995, almost \$1,200 less than the first-gen model. And, of course, buyers will actually pay even less than that. With federal tax incentives, pricing will drop to \$26,495, while California buyers with their additional state incentives will shell out as little as \$24,995.

For a huge swath of buyers, there's a whole lot to like with this new EREV Chevy—especially the part that says: gas pumps optional. ■



## Stunning new coupe or powerful SUV? Yes.

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NEW HAVEN, CONNECTICUT

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here's a dead sparrow stuck in the maw that feeds air into the auxiliary radiator of the quickest and most powerful Mini ever. To the wayward bird, the 2015 Mini John Cooper

Works must've looked huge. It does to us.

The 2,845-pound hatchback has beefed up a bit since the last-generation Mini JCW that debuted in 2008 and a whole lot since the original high-performance Mini that Formula 1 team owner John Cooper developed with his friend Alec Issigonis back in 1959. The new JCW is short but tall and wide. As we drive the elm-shrouded streets of New Haven away from the Yale University campus and onto the back roads of Connecticut, we see too much headliner and not enough windshield.

But every automated rev-matched downshift and exhaust backfire reassures us this is a sports

car. Mini says the JCW is built around its brakes, which are sourced from Brembo and specific to this car. The 13.2-inch front brake rotors and fixed four-piston calipers are so much larger than what's on the Cooper S that Mini needed to tailor a new wheel to fit. The turbocharged inline-four engine produces 228 hp and 236 lb-ft of torque and has hemispherical-type piston crowns for improved durability and a special turbo with better heat resistance. The high-flow exhaust system's wafer-thin tubing reduces weight, and equal-length half shafts and brake-based torque vectoring help curb torque steer.

Outside, there's an aggressive front air dam that channels air (and birds, evidently) into the car's radiators, a rear diffuser that produces downforce, and a rear spoiler that reduces lift. Inside, we see miles of red stitching and omnipresent mock carbon-fiber trim, and the single-piece sport



▼ The seats can be trimmed in leather and faux suede, but the basic synthetic cloth, which is the same material you'd get in a base 3 Series in Europe, is better.

## A hot hatch that honors its creator





## BIG AND BOLD



The manual transmission automatically rev-matches when you downshift. Mini had to design unique wheels to fit around the Brembo brakes.

seats with big bolsters are as curvaceous and sexy as Jessica Rabbit.

We throw the JCW into a series of brutal corners, and the tires squeal as the thick-rimmed steering wheel tries to dance its way out of our hands. The brakes barely fade, and, when we have to stop suddenly, bite hard enough to make our sunglasses fly off and hit the steering wheel. Then we do a huge burnout, emerge from the puffy, synthetic cloud, and fall out of the car laughing. The Mini has not lost its sense of fun.

We cross into New York and arrive at Wilzig Racing Manor, a \$7.5 million adult playground built by a billionaire with an affinity for Italian-built Bimota motorcycles. We're going to drive on his private road course, a short but challenging circuit with lots of elevation changes. The snub-nosed Mini is lethargic coming down the front straight, but we let our speed build and brake way later than we should. The Mini slows down just enough for us to screech left then quickly pitch right into a downhill sweeper, the JCW's cabin swaying

### THE SPECS

**ON SALE:** Now  
**PRICE:**

\$31,450/\$37,350  
(base/as tested)

**ENGINE:**  
2.0L turbocharged DOHC  
16-valve I-4/228 hp @  
5,200 rpm, 236 lb-ft @  
1,250-4,800 rpm

**TRANSMISSIONS:**

6-speed manual,  
6-speed automatic

**LAYOUT:**  
2-door, 4-passenger,  
front-engine,  
FWD hatchback

**EPA MILEAGE:**  
23-25/31 mpg (city/hwy)

**L x W x H:**  
152.5 x 68.0 x 55.7 in

**WHEELBASE:**  
98.2 in

**WEIGHT:**  
2,845-2,885 lb

**0-60 MPH:**  
6.1 sec (manual),  
5.9 sec (automatic)

**TOP SPEED:**  
153 mph

back and forth. The engine is fantastic in its midrange, and the steering, chassis, and brakes inspire confidence, coax us to drive harder, and put a grin on our face.

That grin costs quite a lot. Without any extras, the JCW is \$31,450—and Mini says such stripped-out examples basically don't exist. For the some \$37,000 you'll pay for a car equipped like ours (leaving up to \$9,000 in options on the table) you could get a get a fully loaded Ford Fiesta ST, Mazda MX-5 Miata, or Subaru BRZ and also take your special someone on a romantic weeklong trip to Paris.

Of course, price didn't prevent Mini JCWs from succeeding before, and we don't expect it to be a problem now. Even though Mini has ventured far from its roots with larger, more expensive vehicles, the JCW treatment remains as focused and effective as ever. ■





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# Celebrating 40 Years of BMW North America



After four decades,  
we have become a nation of BMW drivers

By Michael Jordan | Photography by Jessica Walker



## MONTEREY, CALIFORNIA –

The story of BMW in America officially begins in 1975 with the establishment of BMW of North America. If you're so inclined, you can chart the corporate fortunes ever since in the sales numbers of the BMW 3 Series, which was introduced in late 1975 as a 1976 model. But as BMW NA celebrates its 40th anniversary in the U.S., we think the story here isn't about some BMW car or another.

**The BMW 3.0 CSL, right, celebrated BMW NA's inception in March 1975 by winning the Sebring 12 Hours; the BMW 3.0 CSL Hommage R, left, celebrates 40 years of high performance since then.**

Instead the real story is about being a BMW driver, because we are all BMW drivers now.

Of course, time didn't exactly start for BMW in North America in 1975. Max Hoffman, the legendary Austrian-born car dealer based out of New York City, added BMW to his portfolio of import-label car brands in 1954. His investment didn't really pay off until 1962 when the BMW "New Class" sedan appeared. This car then transformed itself into the BMW 2002 (02 Series), and our own David E. Davis Jr. helped make it a sensation among U.S. car enthusiasts in 1968 with a famous road test that carried the headline "Turn Your Hymnals to 2002." DED Jr.'s story helped institutionalize the values we still identify with BMW: austere yet timeless style, efficient yet compelling performance, and a certain soul-stirring liveliness.

When BMW bought back U.S. distribution rights from Hoffman in 1975, car enthusiasts wondered if the change would be for the better. The 1976 BMW 320i that replaced the 2002 had been designed in the shadow of the 1973 fuel crisis, and the E21 with its 125-hp inline-four engine felt oversized, ponderous, and dreadfully slow. Fortunately the belated arrival of an inline-six engine soon energized the E21's reputation. It was followed by the 1982 E30, which turned out to be a roaring success in the go-go years of the 1980s.

The 1992 E36 3 Series went further upmarket in style. The 2000 E46 3 Series grew faster but also notably larger. This troubled enthusiasts at first because the car

seemed more mainstream midsize sedan and less compact sport sedan.

BMW purists have debated this issue ever since, as the 2005 E90 3 Series and the 2012 F30 3 Series grew ever bigger and more comfortable.

After 40 years, we now think of BMW not as a car but instead as a magic formula made from our own associations and expectations. BMW speaks to us of beauty, technology, and utility, and since car enthusiasts have come to embrace these same values, we all have become BMW drivers in a way. Other cars are either like a BMW or not like a BMW, and BMW is where every conversation starts.

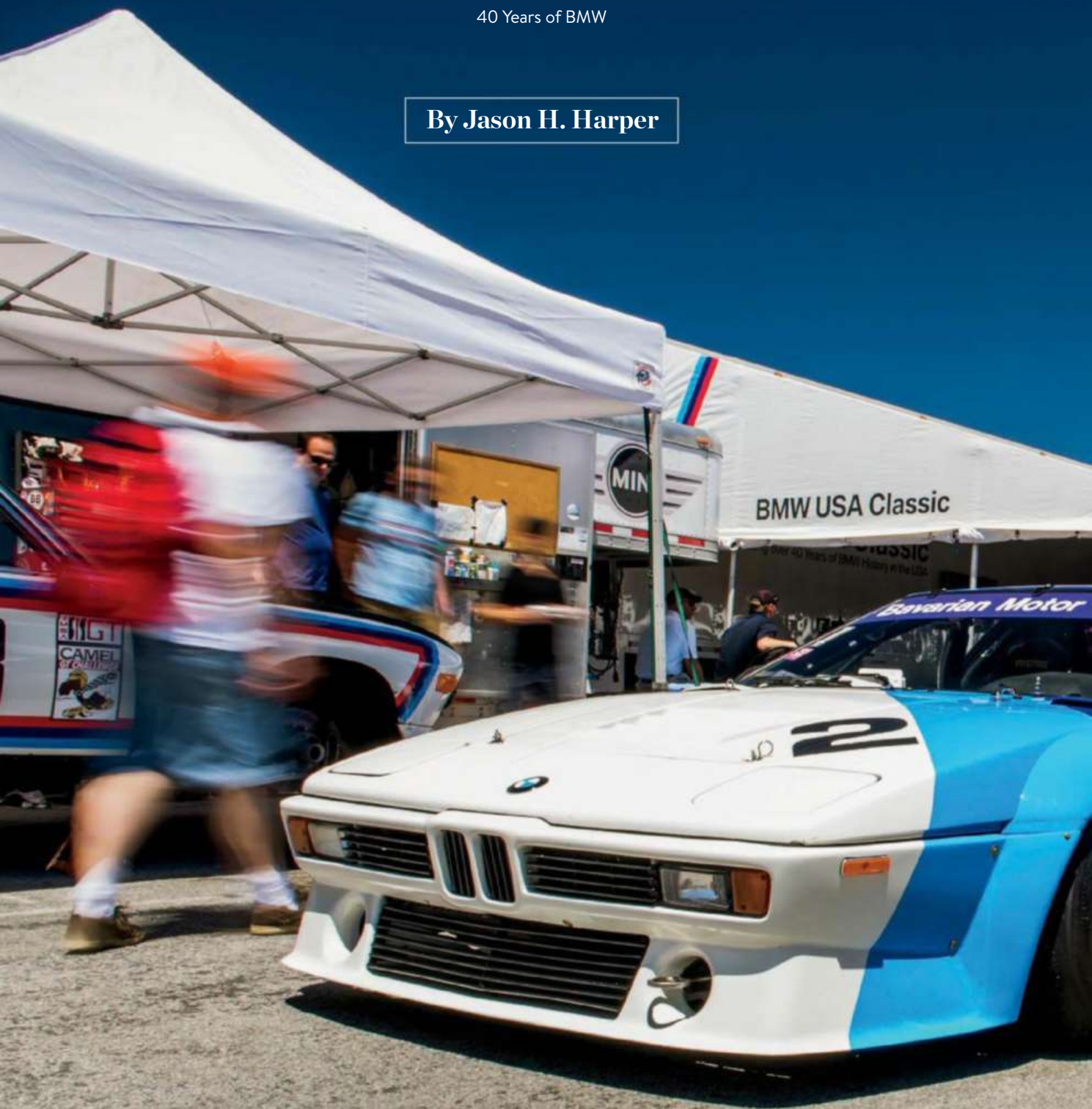
These values cut both ways, of course. BMW itself must measure up to these standards, and its success in doing so is always a matter of some dispute with us. It is as if we have had a 40-year conversation with BMW North America about cars. Sometimes BMW knows better, and sometimes we know better. And yet every time we think BMW has lost its way, we're presented with something like the 3.0 CSL Hommage R, unveiled during the week of classic car festivities in Monterey, California, and pictured here in the same livery as the 1975 BMW 3.0 CSL racing car it's sitting next to in pit lane.

Even though questions of air emissions, fuel economy, and safety have seemed so overwhelming in the U.S. over the past 40 years, BMW still believes in an automobile that is beautiful, energetic, and full of life. And so do we because, all these years later, we still want to drive the kind of car that David E. Davis Jr. rhapsodized about in 1968. ■



40 Years of BMW

By Jason H. Harper



# The One

We race the masterful mid-engine BMW supercar  
around Mazda Raceway Laguna Seca

Photography By Jessica Walker









## V MONTEREY, CALIFORNIA—

intake? Yes. Historic? Very much so. Old? Not even a little bit. This BMW race car is alive, a machine with a shrieking soul. It vibrates all around me, as if there's a live-wire tremor radiating from the center of the car all the way to its fiberglass skin. Yet the chassis is rock solid, so hooked up to asphalt that I can't get it to pivot even if I snap off the gas while cornering. I muscle the shift lever of the five-speed from second gear into third, and the straight-six flexes its rough power. The sound of the 470-horsepower lump behind my head is magnificent.

Wait, the motor behind my head? In a BMW? Yes, this is the BMW M1, Munich's own mid-engine sports car made from 1978 to 1981, a time when it was unthinkable that such a thing could come from a company that was not Italian. It was a curiosity then, and its commercial impact was negligible. But it was a surprisingly grand statement by BMW, and if anyone who had a poster of an M1 in those days is still curious if it drives as good as it looks, the answer is yes—even better, actually.



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Prototype shown with options. Production model may vary. ©2015 Toyota Motor Sales, U.S.A., Inc.



But why should we care about this aging one-hit Bavarian wonder car today?

Because as BMW of North America celebrates its 40th anniversary, it very much cares. If we're all doomed to repeat history (car companies as well as drivers), it is instructive to drive that history and see what went right and what went wrong. In so many ways, the BMW M1 was tremendously right, the kind of special vehicle a current BMW executive might mull over today.

Which makes BMW of North America's decision to acquire and exercise an ever-growing collection of historic race cars pretty smart indeed. This fleet of competition machinery is an excellent riposte to those who accuse BMW of forgetting what the Ultimate Driving Machine feels like. The cars not only run, but they're also actually raced by the kind of people who help determine decisions about future products. On a lesser level that includes a lucky stiff like me in this 1980 M1, a former runner in IMSA sports car races of the 1980s. Far more importantly, it also means BMW executives such as Ludwig Willisch, North America's president and CEO, who is piloting the very BMW 3.0 CSL that won the Sebring 12 Hours in 1975.

Both cars are in the iconic colors BMW race cars made famous. And on this happy day in Monterey, California, Willisch and I are among the 44 cars brawling on Mazda Raceway Laguna Seca at this year's Rolex Monterey Motorsports Reunion. I was cautioned that this event would be more of a procession than a race, but I'm mixing it up with winged Porsche 935s spitting fire from tailpipes and wickedly flared Corvettes making the pavement rumble. The rubbing of fenders is verboten, but these guys are racing, no lie, though the driving is smart and even friendly in a mildly cutthroat sort of way. And there's nothing that puts you more in touch with the spirit of

sports car racing than the sight of a 1972 Porsche 911 RSR and a 1972 Nissan Skyline GT-R in your mirrors as you rocket toward the crest of the hill where the famous Corkscrew awaits on the other side.

Despite its 1970s heritage, the BMW M1 has a jet-set quality to it, a wedgy, clean futurism that still looks modern. Its style was derived from the BMW Turbo, presented by BMW design director Paul Bracq as a show car to celebrate the 1972 Munich Olympics. Shortly afterward, the rules of sports car racing turned away from futuristic prototypes toward cars with the silhouettes of production models, so BMW racing director Jochen Neerpasch persuaded the company in 1975 to embark on a plan to build a mid-engine car. The M1 project was initially placed in the hands of those who had made the mid-engine sports car a sensation—the Italians. Italdesign's Giorgetto Giugiaro handled the design, and Lamborghini was to build and assemble the hardware.

Naturally, disaster ensued. BMW canceled its contract with Lamborghini and commissioned final assembly of the car in Stuttgart at Baur, known for engineering BMW convertibles. By the time the M1 went into production in 1978, the racing rules had changed, forcing BMW to create a single-make racing series called the Procar Championship to promote the car. It ran as a support race for Formula 1 events in 1979, and F1 stars including world champion Niki Lauda went wheel to wheel against privateers. (Go figure; Lauda won the season.)

The good news is that some 450 M1s were made in all, the majority as street-legal cars with a 277-hp version of BMW's 3.5-liter M88 inline-six. Before my Rolex race, I drove a cherry-red example to the track, and it was peppy and fun and so, well, normal compared to other mid-engine cars of the time, all of which were horrors. But the



Not only does BMW North America president and CEO Ludwig Willisch have some of the best sideburns in the business, he's a fantastic driver to boot. Willisch drove the 3.0 CSL, below, while the author drove the BMW M1, right.

THIS CAR IS JUST SO DAMN GOOD—BETTER AND MORE MODERN THAN ANY 35-YEAR-OLD RACE CAR HAS A RIGHT TO BE.







M1 race car is the thing. It gets 470 hp out of the M88, with its Kugelfischer mechanical fuel injection and 24-valve, DOHC, six-cylinder head. The car is bigger than you think, measuring nearly 172 inches overall. Its spaceframe chassis features a classic racing suspension, with control arms, coil springs, and anti-roll bars.

I've had the luck to drive the Lancia 037, the monster Group B rally car, in a tarmac-style rally in the mountains of northeast Italy. The mid-engine Lancia roughly shares the same era and architecture as the M1, yet it was continually trying to kill me. Its mandate was to escape the bounds of asphalt and get sideways, no matter what. The M1 is nothing like the Lancia. The steering is lively yet precise, just this side of heavy. The car glides out of the garage at Laguna

Seca and trundles around the pits, drivable at even ultra-low speeds. The clutch action is easy to manage, and the throws of the five-speed transmission are long in the German style. At speed there's none of twitchiness you'd associate with a mid-engine car, even a modern one.

I race twice on Saturday, each with a race start. There is a long line of historic metal front and aft, millions of dollars glowing in the bright sun. I'm barely aware of the thick groups of spectators in the pit suites on the front straight, the grandstands outside of Turn 4, or those who have made their way to the Corkscrew. My eyes are on the BMWs, Datsuns, and Porsches bunching and weaving on the pace lap, which is always a chance for mass collateral damage. The green flag drops, and the M1's engine thrills to the chase.





TRACK WORKERS AND FANS OF VINTAGE RACING  
WAVE TO CELEBRATE A DISPLAY OF RACING HISTORY  
AT A TRACK WHERE SO MUCH RACING HISTORY HAS  
TAKEN PLACE OVER THE LAST FIVE DECADES.



According to the M1's windshield, this is the fifth Rolex Monterey Motorsports Reunion this car has participated in, and we'd happily be at the wheel for its sixth, seventh, and eighth appearances.



This car is just so damn good—better and more modern than any 35-year-old race car has a right to be. The M1 launches smoothly out of corners as if propelled by a giant rubber band, and the slick rear tires hook up instantly. Beneath my full-face Stilo racing helmet, I'm wearing a stupid Joker-wide grin. But all this power tricks me into driving the M1 like a Corvette, diving into corners and then braking late and hard, relying on the power to compensate during the exit. The brake travel gets longer and longer, so the braking zones for Turn 2 and into the Corkscrew get hairier and hairier.

For the second race of the day, I resolve to brake less and maintain more cornering speed, trusting the slicks to keep the car under control. My lap times improve, and the M1 helps me nail deceptive Turn 5 and Turn 6, which require a nuanced feel for maintaining momentum. As I clip the curbs I'm back on the gas pedal, which the race car manages comfortably. Still, some of my competitors are really fast. The ventilation louvers in the rear window mean I can't see out the back whatsoever, and the tiny outside mirrors are next to useless. A Porsche 935 driven by noted car-restoration entrepreneur Bruce Canepa

bullets by me just inches away. There are other BMWs out here, including a fabulous Luigi-chassis 1976 CLS and a 1977 320i Turbo. BMW of North America's Willisch is looking good in his perfect Sebring winner.

At the end, I bring the car home to the pits, and the crew is happy to see its gorgeous car undamaged. On the cooldown lap, the track workers and fans of vintage racing wave to celebrate a display of racing history at a track where so much racing history has taken place over the last five decades. It's as good a feeling as I've ever had in a car. I briefly entertain the idea of buying a M1 Procar,

then later that night I regain my senses when I ask a collector how much one might run. He replies, "Not bad, probably just over \$1 million."

Race weekend over, I'm driving back to San Francisco in a modern BMW i8. If there's a current link to the M1, it is, curiously, the i8. Despite the complicated drivetrain with its electric motors and three-cylinder engine, the BMW i8 is balanced and poised like the M1 yet also as ready to thrill to the throttle. The BMW i8 isn't just another front-engine sports car, and it certainly isn't some kind of utility vehicle. It feels special. And that's what a BMW really should be about. ■

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# 30 Years of the BMW M3

Three M3s visit three countries in two days,  
driving through one mountain range

By Laura Burstein







MUNICH, GERMANY

MÖSERN, AUSTRIA

LAKE COMO, ITALY



The shape of the BMW twin-kidney grille has changed over the years, and so has the spirit within the M3.

# T

LAKE COMO, ITALY -

he road that runs through Moltrasio on the west side of Lake Como is narrow and winding. On one side, pedestrians meander alongside a stone wall that serves as the only barrier between the street and the rocky shoreline below. On the other, oncoming tour buses make the road seem even narrower. It's making for a sketchy start to our drive from Lake Como, Italy, to Munich, Germany, in a caravan of historic BMW M3s representing the first three generations of the now-famous model.

To many, the BMW M3 needs no explanation. It's as much a part of a car enthusiast's vocabulary as the Porsche 911. But perhaps not everyone knows the M3 wasn't an instant hit in the United States. Its popularity evolved over time, and much like the generation of drivers born in the era of the first M3, the car has grown up, matured, and become civilized.

Stefan Behr is head of communications and events for BMW Group Classic, a division of BMW that handles everything related to the

brand's heritage, including the automaker's vast private collection of historic vehicles. Of the M3, Behr says: "If you drive a 911, everyone knows you're driving a sports car. Drive an M3—well, it has to be someone who is interested in cars to know the difference."

Driving an E30 M3 for the first time is like stumbling upon a secret. Homologated for Group A touring car racing, the first M3 was produced between 1987 and 1992, and it won racing titles in both Germany and greater Europe. This road



version looks nearly identical to the racing car, and there isn't much shared with the standard 3 Series except the core chassis and the hood.

We squeeze this particular E30 M3 through lakeside towns, escaping the organized chaos of Italy as we head north toward the Swiss border. The 1987 Henna Red coupe is raw and incredibly direct. The engine likes to rev, and we let it whine in the upper register as we begin our ascent into the Alps. The first Euro-spec E30 M3s, like this one at our

command, were fitted with a 197-hp, 2.3-liter inline-four derived from the 3.0-liter inline-six of the mid-engine BMW M1.

"The M3 is simply a cut-off M1 engine. That's why it had 2.3 liters in the beginning," Behr says. Although the top-of-the-line engine in the standard E30 was a 2.5-liter inline-six, he explains, "the engineers went back to the four-cylinder, which was lighter and has a higher output at the same time." All Euro-spec cars combine this 197-hp engine

with a five-speed Getrag gearbox with a dogleg slot for first gear. Here in North America, we got a 192-hp version of the inline-four, and the gearbox had a standard H-type shift pattern.

As the roads get steeper, we find ourselves constantly downshifting to navigate increasingly treacherous switchbacks. Spring seems to turn to winter, and snow begins to drift across our path, resulting in a few slippery moments around faster corners. Lucky for us, precise steering

makes for an easy catch, and the sport seats hold us snugly in place.

The M3's beginnings in the U.S. were humble. As BMW readily admits, no one really wanted one. Of about 17,000 E30 M3s produced, only 4,996 were sold (very slowly) in the U.S. Today, of course, the E30 M3 is one of the hottest cars on the collectible market. The value of a concours-quality M3 has skyrocketed in less than three years from around \$25,000 to nearly \$70,000.

At the summit, we hand off





An alpine idyll of winding roads, agile cars, and snow flurries on a summer's day.



the E30 and hop in the next incarnation of the M3, an E36 in Dakar Yellow. The differences between the first two generations go far beyond redesigned sheetmetal. Before, BMW made a race car that happened to be street legal. This time around, BMW made a great road car that happened to also race. “The E30 M3 was built for the purpose of racing,” Behr tells us. “The E36 was produced and engineered mainly as a street-legal car. And that’s the big difference.”

The sun emerges as we make our way down the other side of the mountain, illuminating gingerbread-like houses and fields of wildflowers

that match the M3’s sunny hue. With the E36 M3, BMW built the perfect touring car. It’s still dialed in and responsive but with a refinement the E30 lacks. The ride is smooth and not rambunctious, with a suspension that eats up whatever bumps and ruts have not yet been resurfaced by what seems like an endless supply of Swiss road crews. Here in the Swiss Alps, we want to stop and have our own “Sound of Music” moment, spinning in the middle of a field. And we do.

One of the major differences in the second-generation M3 was the move to the 3.0-liter inline-six engine, which gave the car more power but also

added weight. The engine in the Euro-spec M3 was based on that used in the standard E30, but with modifications that enabled it to produce 286 hp and 236 lb-ft of torque in its first incarnation, which debuted in 1992.

The E36 M3 almost didn’t make it to American soil. BMW of North America told Germany the car was too expensive for the U.S. and declined it. Nevertheless, some employees at BMW Canada decided to display the car at the Toronto auto show, limiting orders to only 45 examples of the Euro-spec car, which quickly sold out. Soon, Americans were clamoring for the E36 M3, and customers

started a letter-writing campaign to bring the car to the U.S. Still worried about cost, BMW developed a less expensive engine for the U.S.-spec car, with an output of 240 hp and 225 lb-ft of torque. An optional five-speed automatic transmission was also offered. Despite its watered-down performance, 35,843 units of the E36 M3 were sold in the United States.

By the time the E46 M3 came along, Americans knew what the M3 was all about. Prospective owners jockeyed to get on waiting lists months before the cars were available. This time, Germany learned its lesson. Introduced for the 2000 model year, the E46 M3 used



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Over time the BMW M3 has become a car that takes you places, and we don't mean just the racetrack.

the same engine, a 3.2-liter inline-six that for the U.S. produced 333 hp and 262 lb-ft of torque, in all variants worldwide. Also new was an optional sequential manual gearbox (SMG), a single-clutch automated manual that replaced the traditional automatic transmission.

On this cloudy morning in Austria, my colleagues weary from a long night of German beer and saunas, I'm particularly excited to get behind the wheel. The E46 M3 was the first car I drove on a racetrack, and I've held that memory fondly in my heart ever since. After spending time in the previous cars, returning to the

E46 M3 feels like meeting an ex-lover. It's familiar, but something has changed. For one, the car is bigger and thicker around the waist than I remember (though small compared to the newest, F30-generation M3).

Driving the final stint from Mösern to Munich, we have a deeper appreciation of the M3's evolution. Although the E30's rawness is distinctly absent in this E46 M3, it has considerably more teeth than the E36, and it manages to be aggressive despite its increased size and weight. The E46 blends the best of the worlds of performance and livability and does it well. This M3 has grown

up, gotten a respectable job, and found a work-life balance.

In racing, the E46-generation M3 found success. "[The E46] was one of the successful race versions," Behr says. "We have seen the challenges the E36 had. [With] the E46, they gave more freedom in the motorsport regulations in what you were allowed to change, so the E46 M3 race car and production car are very different." The E46 M3 was also a sales success, selling 40,522 units in the U.S. It's the car that really put the M division on the map in America.

The roads get wider and flatten out as we head into northern Munich, bypassing

the city center on the western ring road. Soon we reach a sprawling complex of white low-rise buildings where BMW stores many of its vehicles, both classic and new. As we park our M3 and reluctantly hand over the keys, we are keenly aware of having come a long way, not just in driving distance but also in the story of the BMW M3. It's easy to take the M3 nameplate for granted now, yet as these three cars show, it took a long time to sort out its identity, and the enthusiasms and prejudices of those who drive the car on the street—people like us—played a bigger role than we realized at the time. ■





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By Laura Burstein

# 40 Years of BMW ART CARS

A unique canvas for the world's foremost artists

F

LAKE COMO, ITALY -

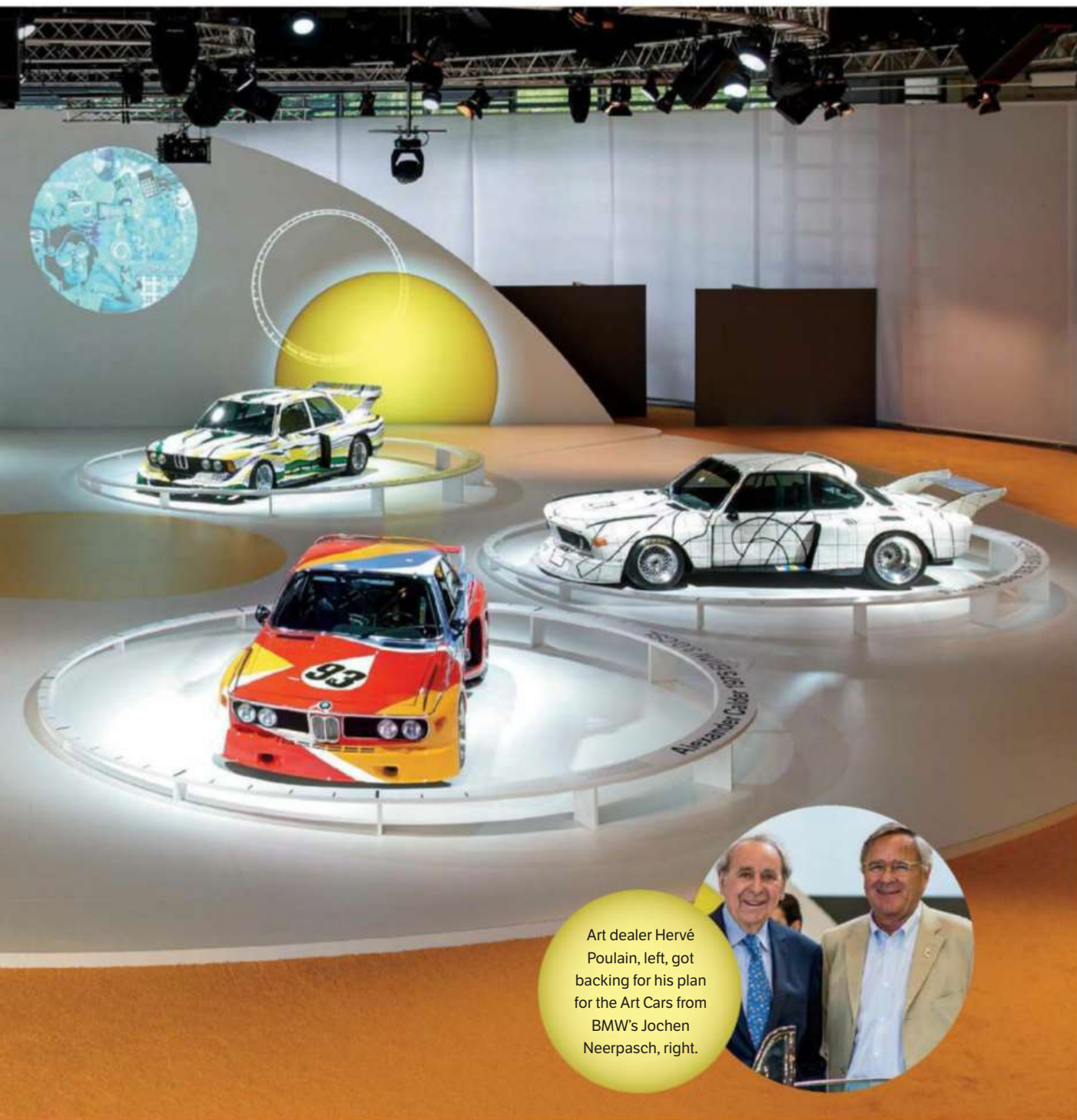
Forty years ago, art dealer Hervé Poulain not only persuaded BMW to let him drive a 3.0 CSL in the 1975 24 Hours of Le Mans, but he also talked the automaker into it being painted by American artist Alexander Calder, better known for his whimsical mobile sculptures than for using 480-horsepower race cars as a canvas. Poulain's clever proposal to transform the CSL into rolling art set the stage for what

unexpectedly became a series of vehicles now known as the BMW Art Cars. And as we looked over five of our favorites at the Concorso d'Eleganza Villa d'Este on the shores of Lake Como in Italy, we saw past the clever marketing ploy and instead reflected on the powerful cultural force that Art Cars has become.

Poulain hatched his plan in the midst of the oil crisis of the 1970s, when public opinion had

largely turned against automobiles and racing. "In the 20th century, the car was a mythic object," the Frenchman told us. "And then the power of the myth decreased more and more in the 1970s. Artists were attacking the car in their paintings because it was the object of a consumer society."

Working with Jochen Neerpasch, BMW's first motorsports director, and Horst Avenarius, BMW's senior



Art dealer Hervé Poulain, left, got backing for his plan for the Art Cars from BMW's Jochen Neerpasch, right.

vice president of corporate affairs, Poulain commissioned his friend Calder to paint the CSL in the artist's signature palette of primary colors. As Avenarius later recalled in "Jochen Neerpasch: Denker und Lenker des Motorsports" ("Thinkers and Leaders of Motorsports"): "Unusual groups of visitors came to Neerpasch's place in the paddock, so that it began to resemble a gallery opening.

Art dealers and critics mixed with stray fans of the brand. ... [They were] unique examples of the interaction between the arts and the automobile."

Together Poulain and Neerpasch understood that cars painted by artists could not only revive interest in racing but could also be used as a tool to boost brand awareness. Indeed, Neerpasch was no stranger to motorsports marketing, as he was the first to suggest selling

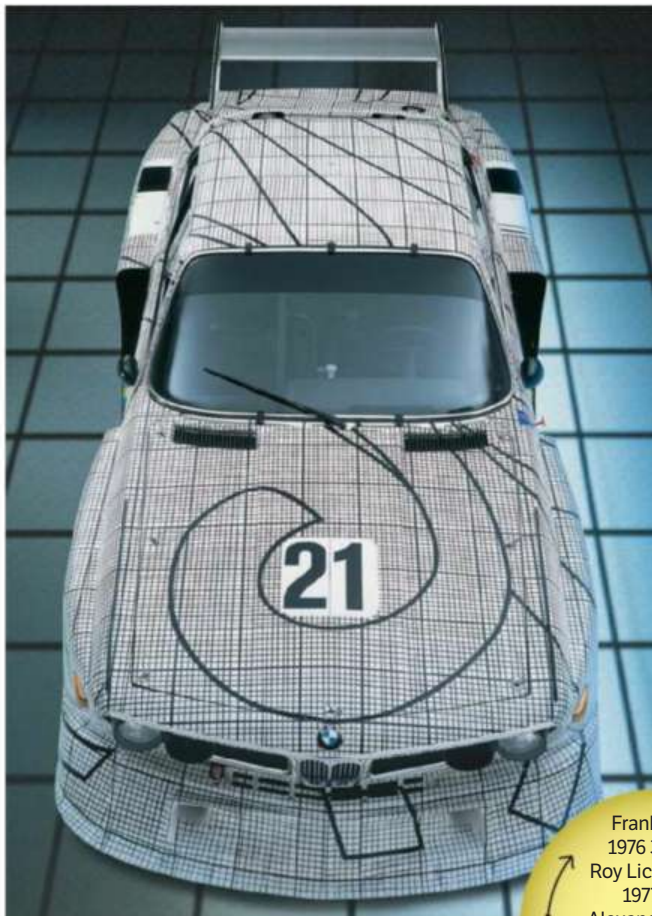
BMW-branded merchandise to race fans, now a huge revenue source for the automaker.

After the Calder 3.0 CSL, two more Art Cars followed in rapid succession. Frank Stella was commissioned in 1976 to create the livery for another 3.0 CSL that incorporated gridlines of graph paper and curves meant to represent drafting tools. Next came Roy Lichtenstein's BMW 320i in 1977, with his trademark

comic-book-style Ben-Day dots. One rule applied: Designs could not interfere with racing regulations. "For me, it was very important to have the artists involved not only with the car but with the action [movement] of the car," Neerpasch said.

In 1979, Andy Warhol painted a BMW M1. With the previous Art Cars, artists created their designs on scale models, which were then





Frank Stella,  
1976 3.0 CSL;  
Roy Lichtenstein,  
1977 320i;  
Alexander Calder,  
1975 3.0 CSL;  
Andy Warhol,  
1979 M1;  
Jeff Koons,  
2010 M3 GT2



transferred to the vehicle by another artisan. But Warhol, after submitting two scale models that BMW rejected, showed up at the studio and proceeded to paint the M1 freehand in 23 minutes.

BMW's collection currently has 17 Art Cars, the most recent of which is a 2010 M3 GT2 painted by Jeff Koons. To the untrained eye, the design scheme can appear to be a dynamic but innocuous burst of color that runs the length of the car. But we've been told that

other interpretations suggest something else, a seminal explosion that begins at the rear and culminates in a single, tailed droplet that seems to penetrate the BMW roundel.

As we walked the grounds of Villa Erba, where the Art Cars were displayed during the concours, rumors of the next Art Car were percolating, with some at BMW hinting at an announcement before the end of this year. Poulain and Neerpasch remain insistent that any future car should return to its racing

roots. "I would love to come back to the racetrack and to come back to the original idea," Neerpasch said.

We think the most logical canvas would be the forthcoming BMW M6 GT3, which is due to replace the current Z4 GT3 in sports car racing in 2016. When we asked about the next Art Car, Neerpasch told us, "The only wish I have is that the next Art Car should compete at a race as important as Le Mans."

There are those who still see

in the BMW Art Cars only a marketing gimmick, but we see something more, as one always does in art. When you consider the plight of the automobile in the 1970s and the status of the automobile today, you can see that almost every car manufacturer is now trying to build art, not transportation. And it was Hervé Poulain and Jochen Neerpasch who saw the future in 1975. As Poulain confided to us, "Jochen and I gave back the notion that the beauty of the car itself is a sales argument." ■

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By Georg Kacher



# Masterpiece

## Driving the BMW 3.0 CSL Hommage (very, very slowly)

**“For now, at least, it’s only a design exercise,”** says Karim Habib, the BMW brand’s chief designer. Then he adds with a broad smile, “But of course we would be delighted to take it to the next level.”

Like almost all BMW concept cars, the CSL Hommage is a runner. True, the only location where we’re allowed to run this unregistered, hand-built coupe is Villa Erba, next door to the site of the BMW-sponsored Concorso d’Eleganza Villa d’Este, where the car will debut. And since it’s just eight hours before the debut, the speed will be limited by hand signals (occasionally frantic) from our BMW nanny.

Despite these restrictions, the first encounter with this stunning reinvention of the

BMW coupe of the early 1970s earns 10 points out of 10 on my personal show-car hit scale. When the six-cylinder engine fires up, the single-outlet exhaust nestled within the rocker sill on the passenger side of the car tattoos the pavement. It’s a totally addictive noise: vibrant, impatient, and loud. Very loud. This twin-turbo engine with electric powertrain boost—said to be 500 hp altogether—sounds like something you’d expect to hear at full cry on the Nürburgring Nordschleife.

The BMW 3.0 CSL Hommage harkens to the 1968-1975 BMW E9 CS. The CSL (coupe, sport, lightweight) appeared in May 1972 as what became known as the Batmobile, a winged, limited-production

homologation special for a racing program. The CSL featured lots of aluminum to reduce weight, but 40 years later carbon fiber is the material of choice for the Hommage. A carbon-fiber aero splitter gives way to a low-flying cooling inlet beneath the twin-nostril grille, while carbon-fiber fender blisters shroud 265/35R-21 tires in front and 325/30R-21 tires in the rear. There’s a ring-type foil at the rear of the roof to reduce aero turbulence, while the rear wing is designed to make the most of the cleaned-up airflow to produce downforce.

Our driving pace is slow to protect the virginal bodywork in Golf Yellow, one of the five original CS colors. After all, one stab at the throttle is all

it takes to make this beast growl and leap forward, and the car rides so low that mice would have to duck to get out of the way. It all comes to an end after an hour of photography, as this modified BMW 4 Series begins to percolate in the heat of Italy, and the car emits its own *eau mécanique*, a scent composed of fresh paint, polish, glue, and unspecified lubricants.

We’re completely in love with this semi-retro work of art designed by Joji Nagashima (exterior), Doeke de Walle (interior), and Patrick McCormack (color and trim), naming only three of the eight designers involved in this project. C’mon, suits in the BMW boardroom, build some more! ■



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**BILSTEIN**

**H&R**

**KONI**

**KYB**

**Eibach**

**KW**









# 7 HOURS IN THE VALLEY

Wherein the \$575,000 Porsche 911  
reimagined by Singer suddenly makes  
all the sense in the world

By Mac Morrison | Photography by Robin Trajano



SUN VALLEY, CALIFORNIA—

# “The sad thing about it all,”

observes Seamus Taaffe, Singer Vehicle Design’s test driver and R&D specialist, “is that Rob Dickinson has made me as anal-retentive as he is. I saw a Ferrari California and its license plate was misaligned side to side by probably half a millimeter. I saw it from three lanes away on the freeway, and I was like, ‘Are you kidding me? The guy who put that plate on should’ve been fired!’ It drives me crazy to be like this, but our cars are the way they are because of the way Rob is.”

## OCD MOTORS

Spray-painted on a wall inside Singer’s shop in the San Fernando Valley is Dickinson’s mandate: “Everything is important.” Nothing about the Porsche 911s that emerge from this place suggests otherwise. These are not new 911s; these are restored and customized 911s. Or, in Singer Vehicle Design parlance, these classic 1990s Carreras have been “reimagined.”

I spend a day with these nouveau California street-rod maniacs and try to digest every detail about the way they “reimagine” their customers’ cars, and I come away with notes that amount to 15,000 words. Lob an inquiry at Dickin-



Rob Dickinson

ROB DICKINSON: DREW PHILLIPS





son, 50, and he replies with mesmerizing monologues chronicling why the part or piece of trim in question looks and feels and works and sounds as it does. You walk away convinced you needed to know it all until finally you realize what really matters is that it all just *works*.

Porsche-mad since he was a boy in the U.K., Dickinson studied car design and eventually landed a job at Lotus Cars. At Hethel, he learned design from Peter Stevens (who later styled the McLaren F1), Julian Thomson (now head of Jaguar design), and Simon Cox

(head of Infiniti's design studio in London). But two years along in the car industry, the other work Dickinson had been doing with a guitar since age 14 finally paid off. As the front man for Catherine Wheel, a 1990s-era alt-rock tribe, he and his mates put "Crank" and "Black Metallic" at No. 5 (1993) and No. 9 (1992), respectively, on Billboard's alternative chart. And so the music business carried him away from Lotus, though he also tells me he realized quickly he wasn't yet ready for a career in the automotive business.

## ART AND SOUL

By 2003, with music consuming less of his time if not his heart, Dickinson moved to Los Angeles and fashioned his first custom Porsche, which was based on a 1969 911. It became famous quickly within L.A. car culture, and he began to think there was something bigger in all





of this. By 2009, Singer Vehicle Design was up and running, taking advantage of Southern California's talented artisans in the custom car world as Dickinson slowly put together his image of the perfect 911. Singer has since then forged partnerships with about 150 suppliers and collaborators, including the Aria Group that supplies carbon-fiber body panels. Another shop developed a special nickel-plating process that ensures a Dickinson-created hue of "milky nickel" is applied with uniform effect on any surface, from metal to plastic to carbon fiber.

"Without living in California, the idea for this car would never have occurred to me," Dickinson reflects. "I was also surrounded by an immense village industry of customizers. Short of being in Detroit, I'm not sure there's anywhere on Earth where such an ambitious project could be undertaken."

## PLAYER'S CHOICE

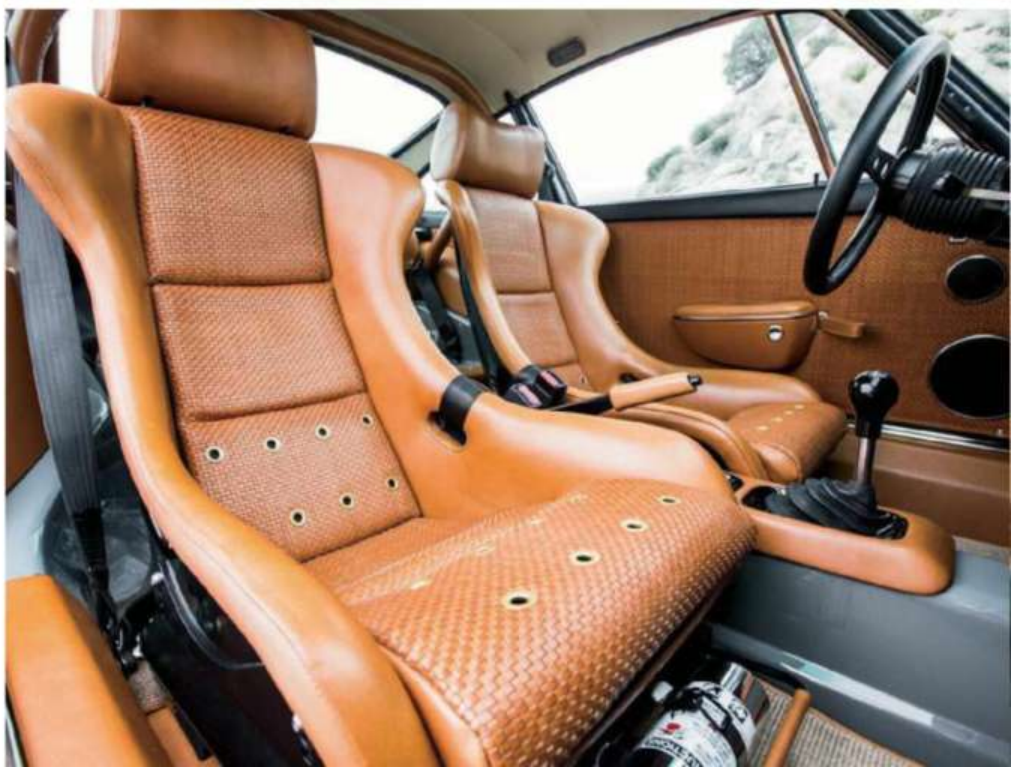
Some 4,000 man-hours and 10 months of time go into the restoration of a single Porsche 911 by Singer. The process begins with a 1990-1994 Porsche 911, which is the last version of the car that remains true in specification to the original 1965 911, complete with trailing-arm rear suspension. The customer begins the process with a 911 and a vision, and then works with Dickinson and his team to make it reality. The possibilities include a \$395,000 version with a 270-horsepower, 3.6-liter engine; a \$440,000 version with a 350-hp, 3.8-liter engine; or a \$480,000 version with a 390-hp, 4.0-liter engine. Further customer selections drive prices ever higher.

Singer strips each car to its shell and installs carbon-fiber bodywork. A different front bulkhead permits conversion to the "long hood" form seen in the classic 911 with its small bumpers, while the whole shell, if a customer chooses, is seam-welded for added structural rigidity, as it would be for a race car. Aside from engine choice, you can pick a five- or six-speed gearbox, rear- or all-wheel drive, KW- or Ohlins-supplied suspension, and steel or carbon-ceramic brakes. There are 75 initial paint choices and 150 "basic" upholstery choices. By the time Singer finishes a car, just about every original piece other than the monocoque and engine block is reworked.

## THINK PINK

In a nondescript building in nearby Van Nuys, Frank Honsowetz leans back in a chair beneath photographs from Ed Pink Racing Engines' (EPRE) halcyon days, when proprietor and L.A. rodding kingpin Ed Pink built winning engines for top-fuel dragsters, Indy cars, IMSA sports cars, and USAC midgets. As Honsowetz, EPRE's general manager, explains, this shop is all about best practices, which means best materials, best engineering, best machining, best assembly, and best testing—all of which is easier to provide when cost is seemingly no concern, as in the case of Singer and its clientele. When Singer approached Porsche Motorsport North America as a possible source for a highly tuned 4.0-liter engine for its customers, it was surprised when Porsche effectively said, "You need to go to Ed Pink's."

"EPRE" likely does not come to mind when you think "Porsche racing engines," but there is indeed such provenance here that includes Porsche 962s of the 1980s as







well as a recent rebuild of a Porsche 917 flat-12. And, no, this naturally aspirated, 390-hp, 4.0-liter flat-six does not leak oil like every stock 964 engine Porsche ever built. EPRE retains only the original engine's block and cam towers. Some 115 hours of work go into the installation of such quintessential Porsche hot rod pieces as Mahle forged-aluminum pistons, Carrillo forged-steel connecting rods, and an Arrows Precision crankshaft. After what we guess is \$30,000 in parts and labor from EPRE, Singer lavishes this engine with enough laser-cutting, ceramic coating, parts, and finishing touches that \$75,000 or so *might* cover the total cost. Did we mention it does not leak oil?

## THE PUNISHER

"You killed a snake!" Taafe shouts as the echo of the 4.0's exhaust kerrangs off the rocky walls beside this winding mountain road high in the Angeles National Forest. I take him at his word because I'm preoccupied with looking a long way ahead as we bend the 911 through these skywritten curves—fast, slow, up, down, on and off camber, blind crests, and the rest of it. For one thing, the car punches as hard as you expect from anything with 390 hp in a sub-2,800-pound package, plus almost 95 percent of the engine's peak torque of 315 lb-ft is available between 4,800 and 6,800 rpm. For another, I don't want to face Dickinson if I so much as drop a tire off the road and scratch one of the wheels. Ferdinand help any wanker who dings this masterpiece of design and engineering.

The heavily sprung clutch action takes some getting used to due to the high engagement point, but it's a nonissue after a few minutes. At regular speeds, this Porsche feels a lot like, well, an old 911, if anything, as its nose pushes wide in a corner. The three-way adjustable Ohlins dampers in this racing-caliber suspension are set today to "fast road" and not "full track," so you feel every bump but you're not jolted stupid. The suspension setup also allows the tires to maintain gooey contact with the road in a prodigal display of rebound control, so even when the front end gets light as you get into the gas (as air-cooled 911s are wont to do), the car stays planted enough so it never feels on the verge of spitting you off the road in a cloud of understeer.



The shift-lever mechanism begins as a stock, \$300 Porsche item. The finished, nickel-plated version comes in as a \$1,500 custom-shop piece.







You feel the same about the rear end. Depending on the way the chassis is loaded up in a corner, the steering fluctuates between heavy and light, and there's always enough information about tire slip so you can keep the car on course without constant correction. The rear is always willing to play if you desire, though not in the widowermaker sense old 911s are known for. It's more like, "I'm here to assist your antics" in a rear-engine concierge sort of way.

ABS is the only electronic driver-assist here. It doesn't intervene with the pulsing brake pedal that is period-correct for the early 1990s; it instead does its work like a contemporary motorsports setup, as the pedal action stays rock hard so you can attack that brake zone with abandon. You know there is something special going on when you look forward to slowing a car

into corners as much you do pitching it through them or running it to the engine's redline. The stopping power is impressive, but the raw, unfiltered feedback that electrifies your right foot is where the satisfaction comes into play.

Put it this way: Your entire body (never mind your heart) absorbs every dynamic ripple in the driving experience. If you judge a car's goodness on how true the final product rings to its original, no-limits vision, then this one is unimpeachable. It represents exactly how I imagine a new 991-series Porsche 911 GT3 would feel if it were made in an era ignorant of devices such as active aerodynamics, dual-clutch gearboxes, and cartoonishly oversize wheel and tire packages. David MacNeil, the WeatherTech founder who owns the 4.0 featured here—the first of its kind—says: "You really need to see the car in person and look at all the hand-

Approximately 34 customers to date have had their cars customized, and Singer is working with another 60 who want their 911s reworked.





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## THE SPECS

### 1990 PORSCHE 911 REIMAGINED BY SINGER

**PRICE**  
(MODIFICATIONS ONLY): \$575,000  
(as tested)

**ENGINE:**  
4.0 SOHC 12-valve  
flat-6/390 hp @ 7,300  
rpm, 315 lb-ft @  
5,900-6,000 rpm

**TRANSMISSION:**  
6-speed manual

**LAYOUT:**  
2-door, 4-passenger,  
rear-engine, RWD coupe

**FUEL MILEAGE:**  
20 mpg (combined) (est)

**SUSPENSION F/R:**  
Strut-type, coil springs/  
strut-type, coil springs

**BRAKES:**  
Vented discs

**TIRES F/R:**  
225/45R-17 / 265/40R-17  
Michelin Pilot Sport PS2

**L x W x H:**  
163.0 x 69.0 x 49.3 in

**WHEELBASE:**  
89.4 in

**HEADROOM F/R:**  
36.0/34.0 in

**LEGROOM F/R:**  
43.0/9.0 in

**SHOULDER ROOM F/R:**  
24.5/21.0 in

**CARGO ROOM:**  
75 cu ft

**WEIGHT:**  
2,743 lb

**WEIGHT DIST. F/R:**  
40/60%

**0-60 MPH:**  
3.3 sec

**1/4-MILE:**  
11.7 sec @ 119.2 mph

**TOP SPEED:**  
176 mph (rpm limited)



machined parts and all the details to make you really appreciate what Singer is doing. It more than justifies the price. In fact I think the price should be twice as much for what you're getting."

MacNeil might indulge in a smattering of hyperbole, but to put his assertion in context, consider: This is not a man new to Stuttgart rarities. He owns and drives coveted homologation specials including a 964 RS 3.8, a 1974 RS 3.0, and a 993 GT2, and he says his latest acquisition belongs in their company.

Still, I've managed to identify an imperfection in Singer's reimagined 911. The "check engine" icon light embedded in the tachometer dial is basically the same one you see on every other average-to-exotic production car, and it resembles a carbureted V-8, complete with the air cleaner on top.

"Hey, Seamus," I say casually, "for all

this attention to detail, shouldn't this icon look like an air-cooled Porsche flat-six? I'm going to mention that to Rob."

The R&D manager, a burly 50-year-old Irishman with a spitfire, no-BS tongue, looks at me, speechless for what I guess is a personal record of about 0.4 second. He fires an expletive and replies, "Great. He'll lose sleep over that. And you know who that project is going to fall to."

A few weeks later, I catch up with Taaffe, who is back in the shop, via phone. Toward our conversation's end, I can't help myself.

"How's my check engine light coming?"

"Yeah," he says, and I'm ready for a well-played, good-natured insult. "We're working on it now. Rob sent out a note about it the other day."

The wisecrack never comes. In its place is merely unspoken adherence to Dickinson's words, graffitied on a nearby wall. ■



For all of the precision-built quality and beauty present in these cars, the standard check-engine icon, above, just won't do.

SPECIAL BONUS CONTENT



C E L E B R A T I N G

# PEBBLE BEACH<sup>®</sup> CAR WEEK

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**A LOOK BACK AT INFINITI'S  
MOST MEMORABLE HIGHLIGHTS FROM THIS YEAR'S  
ACTION-PACKED PEBBLE BEACH CAR WEEK FESTIVITIES.**





## Q60 AND QX30 CONCEPT

INFINITI'S Q60 AND QX30 CONCEPT VEHICLES EMBODY EMPOWERMENT, EXPRESSION, AND EVOLUTIONARY DESIGN WHICH ALLUDES TO AN INNOVATIVE FUTURE.

**NATURAL SYMBOLISM** is noticeable throughout the details and curves of the sport coupe: a double-arch grille evocative of a bridge stretching over water and focused headlights inspired by the human eye.



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INFINITI PROVIDES GUESTS WITH UNIQUE VIRTUAL REALITY TEST DRIVES.



**TECHNOLOGY EXPERTS** were on hand to transport participants to some of the world's most exciting roads around the world, using a virtual reality experience, combining a headset with real-world physics and movement to place them behind the wheel of the Q60 Concept and the QX30 Concept.



SPECIAL BONUS CONTENT



**EIGHT LUXURY INFINITI VEHICLES** were on-hand to allow attendees to experience Infiniti performance for themselves. Included were the Q50 Sport Sedan, Q60 Convertible, and the QX80 Limited.

## INFINITI RIDE AND DRIVE



## INFINITI VIP PARTY

**ON SATURDAY EVENING**, August 15th, *Motor Trend* and Infiniti came together to host a private party with a special performance by internationally-acclaimed musical guest Vintage Trouble.



**GUESTS ENJOYED** beautiful weather, incredible music, and luxurious hospitality, amid a backdrop of stunning automotive perfection.







# PEBBLE BEACH CONCOURS d'ELEGANCE HIGHLIGHTS

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## DAWN PATROL



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## MOST INTRIGUING CARS DURING CAR WEEK

HOW TO CHOOSE FROM ALL OF THE AMAZING VEHICLES AT PEBBLE BEACH? VERY CAREFULLY.



**1938 ALFA ROMEO 8C 2900B TOURING BERLINETTA COUPE** In the last 10 years, this beauty won six Best of Show awards, including Pebble Beach 2008.

**1953 FERRARI 250 Europa Vignale Coupe**



**1952 PORSCHE 356**  
Pre-A Coupe: Amidst all the glitter at The Quail, this was the only unrestored barn find on the lawn.



**1949 MERCURY 9CM SAM BARRIS CUSTOM COUPE**  
The first Mercury coupe "chop top" was so dramatic it ended up on the December 1951 of *Motor Trend*.



**1937 DELAHAYE 145** Franay Roadster Art deco bodywork belies a chassis that began life as a 12-cylinder Grand Prix racer.





## THE QUAIL HIGHLIGHTS

THE QUAIL, A MOTORSPORTS GATHERING, OCCURRED FOR THE 13TH CONSECUTIVE YEAR, WITH ENTHUSIASTS REVELING IN THE SIGHTS AND SOUNDS OF THE ULTIMATE COLLECTION OF RARE VEHICLES.



AS A PLATINUM SPONSOR, Infiniti hosted a large activation at *The Quail, A Motorsports Gathering*, within a custom-built hospitality lounge on the Practice Range of Quail Lodge and Golf Club. Guests were invited to explore the Q60 Concept and the exceptional Infiniti Red Bull Racing Show Car up-close while interacting with the Infiniti technology experience, and enjoying handcrafted Smitten Ice Cream.



## BEST OF SHOW OF ALL THE FANTASTIC AUTOMOBILES SEEN AND SHOWN, THERE ARE A FEW THAT SIMPLY RISE ABOVE THE REST.



**JIM PATTERSON** brought his Italian Isotta Fraschini Tipo 8A Cabriolet all the way from Louisville, Kentucky to win Best of Show at the Pebble Beach Concours d'Elegance.



**THIS STUNNING** 1968 Alfa Romeo Tipo 33 Stradale owned by Mouse Motors in Illinois won top honors at *The Quail*.



1968 ALFA ROMEO  
TIPO 33 STRADALE



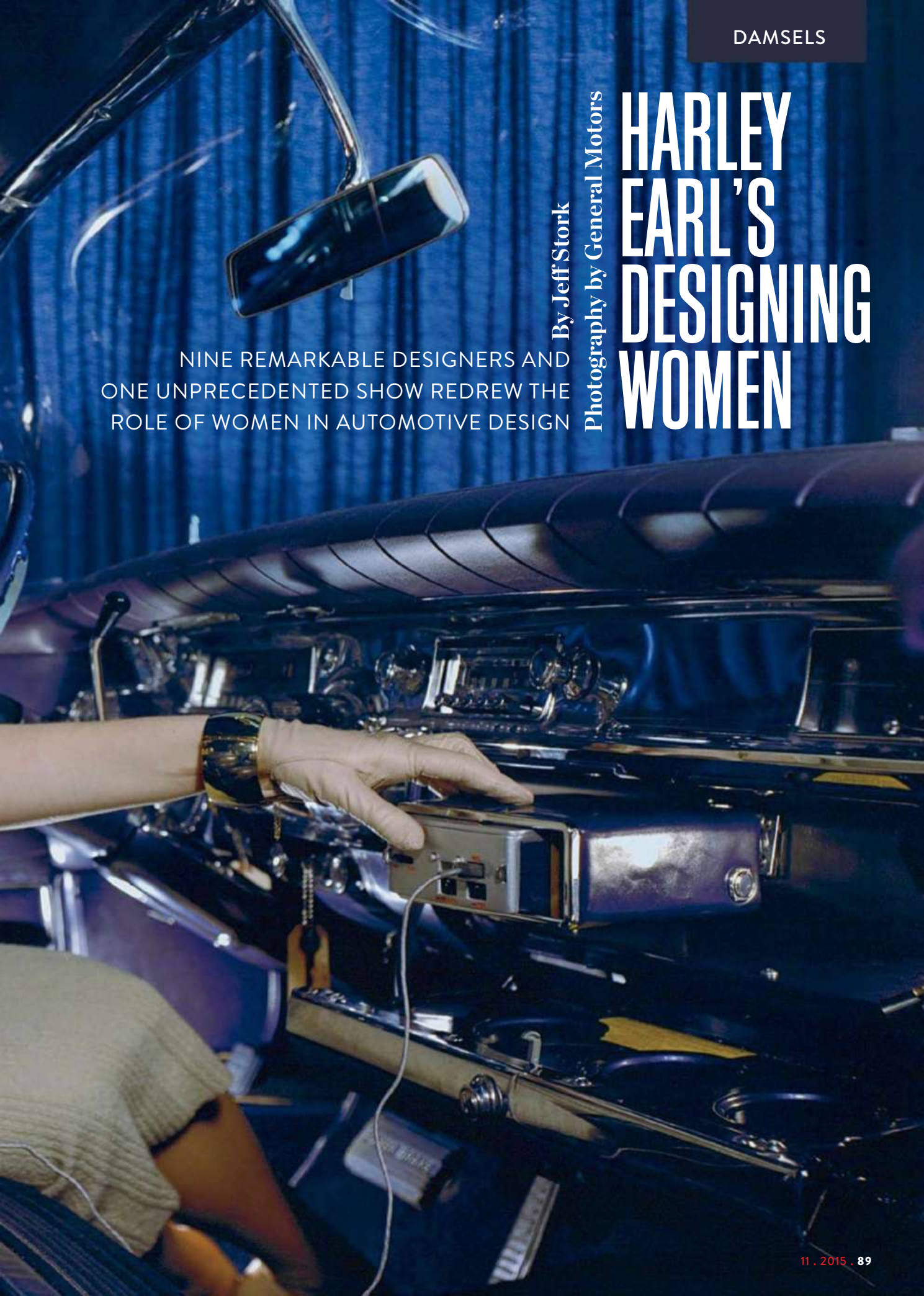




By Jeff Stork  
Photography by General Motors

# HARLEY EARL'S DESIGNING WOMEN

NINE REMARKABLE DESIGNERS AND  
ONE UNPRECEDENTED SHOW REDREW THE  
ROLE OF WOMEN IN AUTOMOTIVE DESIGN







# It was quite

unlike any show of concept cars yet seen in the then-new General Motors Styling Dome. Streamers of red fabric descended from the interior of the dome. A trio of cylindrical cages some 30 feet high were filled with a hundred chirping canaries. Fragrant hyacinths in pots ringed five large circles of carpet on the floor. And within each carpeted circle were two cars, grouped by make.

But the real surprise in this dramatic display was that each of the 10 glistening show cars within GM's inner sanctum of design had been

customized by women. The 1958 event was dubbed the Spring Fashion Festival of Women Designed Cars. Orchestrated by GM styling chief Harley Earl, it was the first exhibition by female auto designers anywhere in the world.

The auto industry in its early years didn't really seem to pay much attention to women. Betty Thatcher Oros had been a designer at Hudson for a couple of years in the late 1930s. Earl had hired his first female designer, Helene Rother, in 1943. And there was Audrey Moore Hodges, who joined

Studebaker in 1944 and later went on to Tucker. But only in the postwar era did automakers start to think seriously about women. The mass move to the suburbs brought with it the two-car household and suburban female drivers. By the mid-1950s, the biggest question in the car business was how to appeal to women.

Earl decided that the best way to sell more cars to women would be to involve them in the design process. In 1955 he traveled to the Pratt Institute in Brooklyn, New York, to find suitable candidates. There Earl found seven of the nine designers that GM public relations came to call the "Damsels of Design."

The women relocated to Detroit. Six worked in the design studios within each of GM's automotive brands—two at Chevrolet and one each at Buick, Cadillac, Oldsmobile, and Pontiac. The remaining three went to GM subsidiary



Frigidaire, working on the "Kitchen of Tomorrow," as well as displays and details for the automotive studios. Within the car division studios, the women were all assigned to interior studios and worked with color and trim, as well as with interior detailing.

Morale among the women was generally high, although some didn't enjoy being called Damsels and would have preferred simply to be treated on par with their male counterparts. Yet at the same time, these women realized they were trailblazers and, as they said both at the time and in later years, GM provided a great opportunity for the advancement of women in the world of design.







Opposite page:  
GM designers, clockwise from left,  
Sue Vanderbilt, Ruth Glennie, styling  
chief Harley Earl, Jeanette Linder,  
Peggy Sauer, Sandra Longyear, and  
Marjorie Ford Pohlman.



The Damsels of Design were reaching their pinnacle of influence in the spring of 1958 when Harley Earl came up with what was unofficially called the Feminine Auto Show. Each studio was tasked with preparing two cars. The women would have total control over their appearance. Although this presentation might seem patronizing today, there had never been a show of this type, prepared by women, in the history of the car industry.

The Feminine Auto Show cars were exhibited in the Styling Dome, and GM executives from all over the country flew in to see them. After that, the cars were moved to the main exhibit hall of the General Motors headquarters in Detroit. The show attendees were invited to vote for their favorites. The Damsels went all out, and the cars were dazzling. The other feminine contribution to the show was the display itself. The fabric drapes, cages of canaries, and hyacinth-ringed carpet circles were the work of Gere Kavanaugh, one of the Damsels who worked on displays and exhibits.

From Chevrolet came Jeanette Linder's Impala Martinique, a convertible in pearlescent yellow and white that featured seat upholstery inserts in a specially designed four-color fabric. The same fabric was used to line the trunk and to create a set of custom luggage. Within the cabin, lighted makeup mirrors and a glove-box-mounted vanity were designed to catch a lady's eye.

Ruth Glennie painted her Fancy Free Corvette in a metallic silvery olive and created a matching interior that was set off by four sets of seat covers, one for each season. They ranged from a yellow print for summer to simulated black fur for winter. Fancy Free was also equipped with a storage bin for a purse and—a first for GM—retractable seat belts.

From the Buick studio, Marjorie Ford Pohlman created two cars. Her Tampico Buick Special convertible was painted alabaster with a flame orange interior. It featured bucket seats and a storage console for binoculars and a camera. She also designed Shalimar, a top-of-the-line Limited four-door hardtop painted deep royal purple with an interior of purple and black leather and a special purple cloth. It also had a robe that could be stowed in the backside of the front bench seat and even a swing-out dictaphone in the glove box.



Marjorie Ford Pohlman with the Tampico Buick Special. She also designed a top-of-the-line hardtop (see opening photo).

Peggy Sauer created the Oldsmobile Fiesta Carousel station wagon in a metallic blue with matching interior. Carousel was designed with children in mind, and it featured a magnetic game board that could be attached to the back of the front seat. Sauer placed umbrella holders in the front doors and also located parent-friendly controls on the dashboard for the rear-seat door latches and window switches. Meanwhile, her Rendezvous Ninety-Eight convertible was finished in metallic rose with matching rose leather upholstery.

From the Pontiac Studio, Sandra Longyear designed a Star Chief hardtop called the Bordeaux in a deep maroon. It had asymmetrically trimmed leather-upholstered seats and a unique system of leather trunk straps to hold groceries. Her Bonneville Polaris convertible was finished in a color she called Starfire Blue. It featured bucket seats finished in two-tone blue leather as well as a storage compartment for picnic gear.

Sue Vanderbilt created two Cadillacs. Her Saxony convertible was finished in a gray-green metallic with a matching cloth-and leather-trimmed interior, which featured storage pockets in the seat backs. She also did an Eldorado Seville coupe called the Baroness in black with a black vinyl top. It had a custom black-and-white interior with carpeting and seat trim of black Mouton and was even fitted with a telephone.

Top honors in the subsequent popularity vote went to Jeanette Linder's Impala Martinique. Glennie's Fancy Free Corvette, which finished third, is the only car to have managed to withstand the test of time. This 1958 Corvette (a model originally styled by *Automobile's* Robert Cumberford) has recently been restored to its original condition, seasonal seat covers and all.

Shortly after the Feminine Auto Show, the Damsels of Design lost their benefactor. Harley Earl retired in 1958, and his successor, Bill Mitchell, did not share Earl's enthusiasm for female designers. Most of the Damsels moved on to other companies. All of the women were successful in their subsequent careers, and their accomplishments are still celebrated from time to time in special displays by either GM or various museums.

One Damsel stayed at GM. Sue Vanderbilt became assistant studio chief at Cadillac and then went on to the Advanced Studio before leaving the company to earn her MFA at the Cranbrook Academy of Art in Michigan. When she returned to GM, she found herself demoted and started over as a senior designer at Chevy. Undaunted, she worked her way up to being the first female studio chief at GM, taking control of Chevrolet Interior Studio II in 1971. Illness forced her early retirement in 1977.

The immediate results of the Feminine Auto Show were minimal. Buick paid tribute to Marjorie Ford Pohlman's concept, Shalimar, by naming a shade of blue after it for the 1959 model year, and the pleated bucket seats of Sandra Longyear's Pontiac Bonneville Polaris convertible inspired the tri-tone buckets that appeared in the 1959 Bonneville. But the long lens of the modern era is more telling, as many of the special features that the Damsels promoted—child-proof doors, makeup mirrors, retractable seat belts, and storage consoles—have found their way into contemporary automobile design.

Perhaps the whole adventure is best summarized in the words of Sue Vanderbilt, in an address she gave back in the day to the Midwest College Placement Association: "Not too long ago, management gave the women designers at GM Styling the opportunity to express our viewpoints on cars designed especially for the woman. But I think the most significant thing about this program is that the designs were as appealing to the men who saw them as the women. It was a designer's paradise, and we particularly enjoyed proving to our male counterparts that we are not in the business to add lace doilies to seat backs or rhinestones to the carpets, but to make the automobile just as usable and attractive to both men and women as we possibly can." ■



“IT WAS A DESIGNER’S PARADISE, AND WE PARTICULARLY ENJOYED PROVING TO OUR MALE COUNTERPARTS THAT WE ARE NOT IN THE BUSINESS TO ADD LACE DOILIES TO SEAT BACKS OR RHINESTONES TO THE CARPETS.” —SUE VANDERBILT



The child-centric interior on Peggy Sauer's Oldsmobile station wagon, top, foreshadows modern minivans and crossovers. Ruth Glennie's Fancy Free Corvette, above, was restored a decade ago by a private collector.





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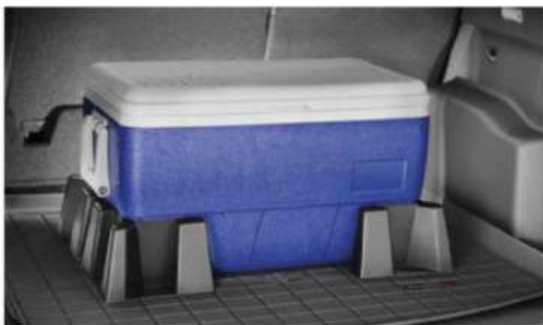
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TechLiner® and  
Tailgate shown

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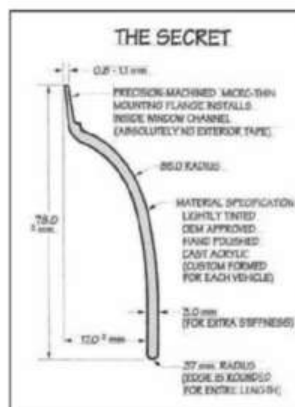
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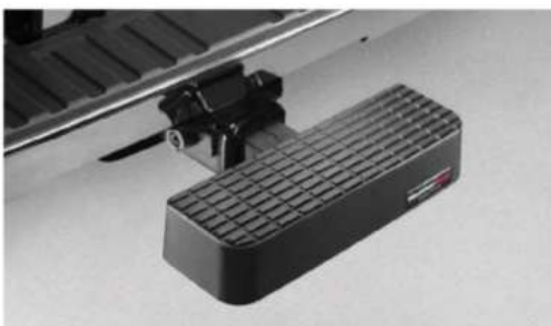
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# Upshift



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## 2014 CHEVROLET CORVETTE STINGRAY Z51

Does the Corvette live  
up to its promise?



PHOTOGRAPHY BY PATRICK M. HOEY



F

or much of its history, the Chevrolet Corvette has made promises it couldn't keep.

America's sports car has always aimed to beat European competitors costing twice as much, and it frequently has put up the necessary performance stats to do so. But from behind the wheel, this bold quest has almost always come up short. Although fast and fun, the Corvette has usually lacked the refinement and attention to quality that makes a relatively expensive sports car worth that extra money.

The seventh-generation Chevrolet Corvette, the all-new flagship for an all-new General Motors, aims to live up to its promise at last. Our first few drives in the car left us so impressed we named it Automobile of the Year. But we still wondered whether the Corvette would be as brilliant over the long haul. To find out, we acquired a 2014 Corvette Stingray for a Four Seasons test.

We equipped our Corvette with options that would maximize its smashing good looks, everyday comfort, and commanding performance—all of its best attributes. We started with the Z51 performance package (\$2,800), which includes heavy-duty engine cooling, a dry-sump oil system, a shorter final-drive ratio, an electronic limited-slip differential, larger brakes, and a firmer suspension. We also added a performance exhaust (\$1,195), which frees up 5 hp and plays a louder tune at the twist of a dial. We knew the Z51's stiff conventional dampers wouldn't play well in Michigan, where the car would spend most of its time, so we upgraded further to



magnetorheological dampers (\$1,795). They adjust from softer than the base car (Touring) to stiffer than Z51 (Track).

To the interior we added the slimmer, better bolstered Competition Sport seats (\$1,995), carbon-fiber trim (\$995), a navigation system (\$795), and a premium package (\$4,210) that bundles a head-up instrument display and upgraded stereo with seats that include heating, cooling, and power lumbar adjustment. Finally, we couldn't resist dressing up the exterior by choosing red brake calipers (\$595) and black wheels (\$495).

That's a long list of options, yet our final price of \$68,060 is still about 17 grand cheaper than a base Porsche 911.

On top of all the goodies, we opted for the \$990 privilege of picking up the car ourselves from the National Corvette Museum in Bowling Green, Kentucky. There we found our white knight waiting for us. We settled into the sculpted red driver's seat, fired up the 460-hp V-8 for the first time, and rolled outside. It didn't seem at all incongruous when a tour group of excited elementary schoolkids spontaneously whooped and applauded.

*Automobile* staffers were nearly as effusive when the Corvette

arrived in Michigan. "Drove around the office park. Palms sweaty," daily news editor Eric Weiner noted for the logbook. More expensive and more exotic cars visit the *Automobile* parking lot with relative frequency, yet few drew as much attention from editors and onlookers alike as this one. "So special, so distinctive, and so cool," gushed daily news editor Joey Capparella. "Every time I drive it, I feel inclined to go on an adventure." Many of us did just that. The 'Vette accrued 27,847 miles in its four seasons with us, rolling across much of the Midwest and the Eastern seaboard.

In the crucible of repeated highway drives and hundreds of daily commutes, we were pleased to find that the Corvette, unlike its



Optional black-painted wheels were almost never this clean but looked good regardless.



We loved the snug seats and thoughtfully arranged controls. But some editors had trouble with the transmission's seven speeds.



## RUNNING COSTS

### MILEAGE

27,847

### WARRANTY

3-yr/36,000-mi bumper-to-bumper  
5-yr/100,000-mi powertrain  
5-yr/100,000-mi roadside assistance

### SCHEDULED MAINTENANCE

**6,522 mi:** Oil change, oil filter replaced, \$0

**14,346 mi:** Oil change, oil filter replaced, \$31.99

**20,765 mi:** Oil change, oil filter replaced, lubricate suspension, inspect tires, belts, and hoses, \$55.05

### WARRANTY REPAIRS

**6,522 mi:** Replace sticking traction control button

**11,135 mi:** Perform front suspension alignment; fix misaligned passenger door

**20,765 mi:** Resurface pulsating brake rotors

**25,475 mi:** Replace fuel pump module; resurface front rotors; replace leaking rear-differential seals

**27,267 mi:** Replace fuel pump module control

### RECALLS

Passenger seat side-impact airbag  
Fuel filler anti-siphon grid out of position

### OUT-OF-POCKET

**17,167 mi:** Mount and balance winter tires, dispose rear summer tires, \$2,913.62

### FUEL CONSUMPTION

EPA city/highway/combined:  
17/29/21 mpg

Observed: **20 mpg**

### COST PER MILE

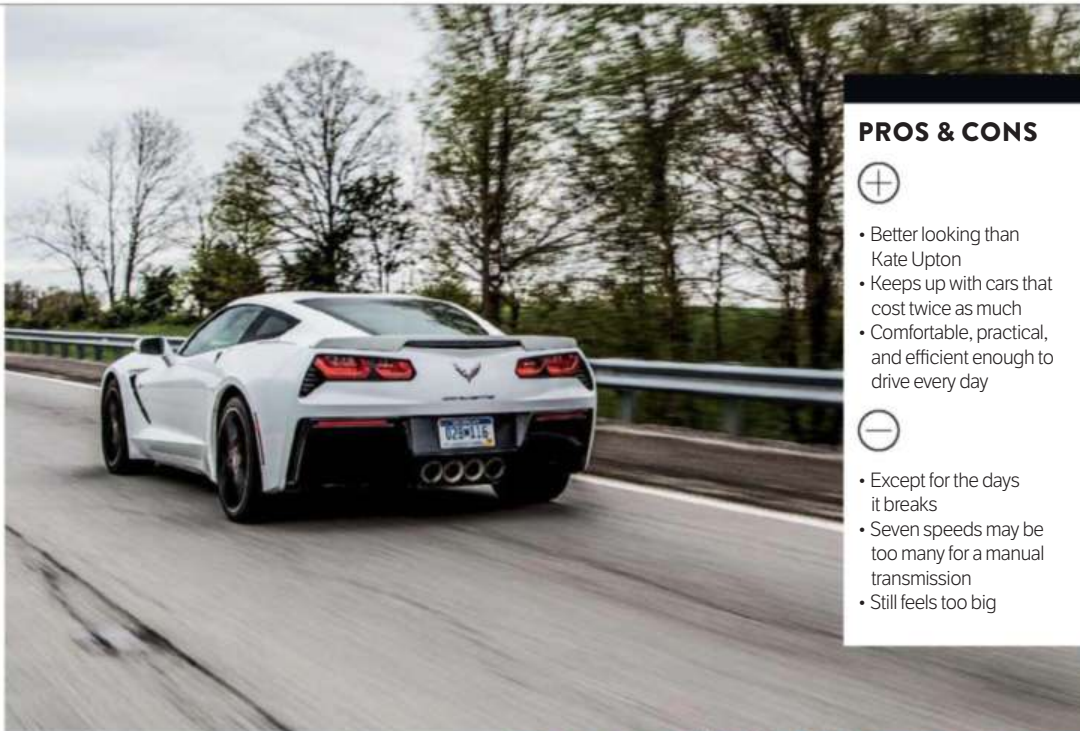
(Fuel, service, winter tires) **\$0.28**  
(\$0.75 including depreciation)

### TRADE-IN VALUE

\$54,900\*

\*Estimate based on information from  
Intellichoice.com





## PROS &amp; CONS



- Better looking than Kate Upton
- Keeps up with cars that cost twice as much
- Comfortable, practical, and efficient enough to drive every day



- Except for the days it breaks
- Seven speeds may be too many for a manual transmission
- Still feels too big

## PRICES &amp; EQUIPMENT

## STANDARD EQUIPMENT

Power seats, mirrors, window; power tilt and telescope steering wheel; leather; Bluetooth; 9-speaker Bose audio system; USB input; dual-zone climate control; HID headlights with LED turn signals; removable carbon-fiber roof; backup camera; 6-month subscription to OnStar; SiriusXM radio with 3-month subscription

predecessors, has thoughtful ergonomics backing up its style. The cabin is relatively easy to climb into and to see out of, and the Competition Sport seats comfortably supported drivers ranging up to 6-foot-2. If you're taller, senior editor Chris Nelson warned, the Corvette could be trouble. "A friend of mine taller than me tried to sit in the Corvette, but he couldn't fit," Nelson said. "Of course, he loved it anyway." Meanwhile, the crisp head-up display proved its worth on night trips by allowing drivers to dim the instrument panel and minimize glare. Control buttons on the steering wheel buttons are clustered so that drivers can tap them without shifting their grip on the rim. And a handful of perfectly placed knobs and buttons complement the center touchscreen interface.

The only ergonomic sore spot proved to be the shift linkage for the seven-speed manual transmission, as the tightly spaced gates tripped up drivers hurrying down through the gears from seventh directly to fifth or from fifth directly to third. (Probably this is a predictable issue with so many gear slots.) Once in seventh gear, the Corvette was happy to purr for miles with half of its

Stalled outside of Louisville, Ky. OnStar diagnosed it remotely as a fuel-sending issue.



cylinders deactivated. Despite driving like teenagers, we frequently saw the 29 mpg promised by the EPA ratings on highway trips and observed a respectable 20 mpg overall.

The C7 also proved its prowess as a sports car time and again. As always, the Corvette is a performance bargain, and this car's 0 to 60 mph time of less than 4 seconds would otherwise command a six-figure price. But the C7 also provides the nuanced driving experience that we prize in BMWs and Porsches. The effort level of the electric-assist steering builds up in a natural way during cornering, and the firm action of the brake pedal proves easy to modulate. And whereas Corvettes

of the past had a way of snapping loose at the limits of adhesion, the rear end of our C7 always behaved predictably, whether we were hammering down a back road or sliding through snow.

Mind you, the Corvette hasn't lost its character. Take, for instance, the view from behind the steering wheel over the hood. "One of the most distinctive in the automobile business," one of us said. Not everyone likes it, though. "The long hood makes the Corvette feel bigger than a 911 even though they're close to the same size these days," explains Detroit bureau chief Todd Lassa. Of course, no one complained about what lay under that hood. Press the accelerator pedal in any



## OUR OPTIONS

Z51 performance package (\$2,800) including performance suspension; dry-sump oil system; electronic limited-slip differential; larger, slotted brake rotors; larger, staggered wheels and tires; numerically higher gearing; aero package. 2LT package (\$4,210) including power bolster and lumbar adjustment, color-keyed console and doors, grocery net and luggage shade, heated side-view mirrors, heated and ventilated seats, auto-dimming rear and driver's side-view mirror, 10-speaker Bose audio system, universal home remote, alarm system. Competition Sport seats (\$1,995). Adjustable magnetorheological dampers (\$1,795). Multimode exhaust (\$1,195). Carbon-fiber interior trim (\$995). Navigation (\$795). Red brake calipers (\$595). Black wheels (\$495). Personalized plaque (\$200). Corvette Museum delivery (\$990).



gear and at any speed, and the V-8 delivers a wave of power and a wall of sound that builds until 6,600 rpm. Far from being inferior to overhead-cam competitors, this pushrod V-8 strikes us as an engineering marvel and a rare sensory pleasure.

For all the Corvette C7's heroic qualities, it nevertheless sadly lacked the quality we anticipated. Sure, we expect to expend some extra effort and cash while caring for a high-performance machine. That's why we barely batted an eyelash when the rear summer-only, high-performance tires were toast after 17,000 miles. (Yeah, we like burnouts.)

Some issues, though, are difficult to justify. The passenger door wasn't aligned correctly. The transmission liked to pop out of first gear. The differential seals leaked and required replacement under warranty. Worst of all, the fuel pump failed—twice. It happened once in a driveway during the dead of winter and once on the side of a road in rush-hour traffic. We took the Corvette to multiple Chevrolet dealerships and found them unfailingly polite but frequently unable to fix or even acknowledge our problems on the first visit. The transmission, for instance, was deemed to be “working as designed.”

Chevrolet says all these issues



It even looks sexy on a tow truck. The dealer replaced the fuel pump, but we'd have more issues down the road.

have since been addressed both on the assembly line and at dealerships. There's now a service bulletin for early 2014 Corvettes that have trouble shifting into first gear. The differential seals have since been re-engineered, as has the fuel pump. (Chevy says the problem had to do with operating on fuel with higher than typical amounts of sulfur.) It's great to hear that Chevrolet is tackling such problems, but we wish the car had been right from Job One.

In this sense, our Corvette failed to live up to its promise. It's a real shame because few cars have been as promising as this one. “People accept mechanical quirks in exotic machines like the Ferrari 458 Italia yet somehow expect the far, far less expensive Corvette to

perform as unobtrusively and reliably as a Chevy Malibu,” notes West Coast editor Michael Jordan.

For all that, the Corvette C7 executes all the small stuff that makes German cars compelling but also delivers on what makes American cars fun. We never tired of revving the engine in parking lots, charging through highway on-ramps, or making someone's day just by passing them on the street. “It's miles ahead of any Corvette before it, and the engineering behind this thing is truly staggering,” says Capparella. “But the actual appeal is way simpler than that. It looks like a Ferrari, goes like stink, and is cheap enough for real people to afford.” ■

## 2014 CHEVROLET CORVETTE STINGRAY

### STAR RATING:



### BASE PRICE:

\$51,995

### AS-TESTED PRICE:

\$68,060

### ENGINE:

6.2L OHV 16-valve V-8/  
460 hp @ 6,000 rpm,  
465 lb-ft @ 4,600 rpm

### TRANSMISSION:

7-speed manual

### LAYOUT:

2-door, 2-passenger,  
front-engine, RWD coupe

### EPA MILEAGE:

17/29/21

(city/hwy/combined)

### SUSPENSION F/R:

Control arms, transverse  
leaf spring/control arms,  
transverse leaf spring

### BRAKES F/R:

Vented discs/vented discs

### TIRES F/R:

245/35R-19/285/30R-20

Michelin Pilot  
Super Sport ZP

### L x W x H:

177.0 x 73.9 x 48.6 in

### WHEELBASE:

106.7 in

### HEADROOM:

38.0 in

### LEGROOM:

43.0 in

### SHOULDER ROOM:

55.0 in

### CARGO ROOM:

15.0 cu ft

### WEIGHT:

3,435 lb

### WEIGHT DIST F/R:

49/51%

### 0-60 MPH:

3.9 sec

### 60-0 MPH:

103 ft

### 1/4-MILE:

12.2 sec @ 117.7 mph

### SKIDPAD:

11 g

We never tired of the Corvette's aggressive, angular styling.



TOW: DAVID ZENLEA



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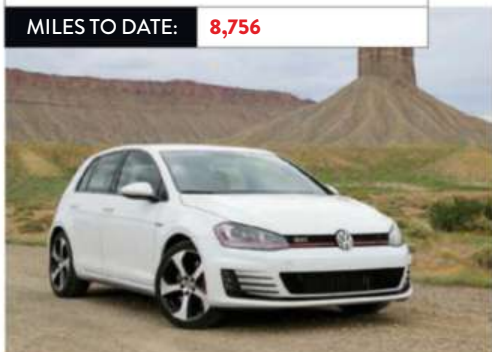
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## VOLKSWAGEN GOLF GTI

MILES TO DATE: **8,756**



**1,904** Eco-friendly upshift reminders from the instrument cluster are a total buzzkill. We don't need to be told how to drive, VW. Reminders not to forget our cellphone in the cupholder are, however, most useful. **3,266** Copy editor Kara Snow: "Clark plaid cloth seats are as comfortable as they are chic. Compelled me to match my wardrobe to the car." **5,854** "Big brakes stopped me from a grille-full of brown bear that was lumbering out of some bushes," says contributing photographer John Lamm after dancing along forested two-lane roads in Colorado. Good thing we got the Performance package. **6,025** The GTI avoided the bear, but a stowaway rodent proved just as dangerous, chewing through some wiring near the engine. Replacement wiring harness: \$1,200. Rat trap: \$5.48.

## MINI COOPER

MILES TO DATE: **15,884**



**9,101** Lots of squeaks and rattles for a \$30,000 car. Wasn't this bigger Mini supposed to be less of a toy and more premium? Our Four Seasons Ford Fiesta ST is five grand cheaper and feels better put together. **10,967** The EPA downgraded the Cooper's official fuel-economy figures after finding a flaw in Mini's math. Our real-world consumption proves the feds are spot on: 33 mpg combined with 40 mpg on the highway. **11,322** "Auto rev-matching feature makes downshifting in Chicago traffic palatable," says daily news editor Jake Holmes. Less palatable is the vague clutch take-up. **13,463** Taller gears provide better fuel economy, but no one likes to stall climbing a driveway in second gear. **14,759** Love the traditional hand brake, one of the few things in the Mini that's not a gimmick.

# Ford Mustang

MILES TO DATE: **8,471**

**1,611** Black wheels, bright orange paint, and an aggressive stance make for one badass-looking pony. "Looks like a high-performance Mustang from every angle," says senior editor David Zenlea. **1,982** But it doesn't sound like one. We pull up next to an identical orange Mustang at a stoplight on Detroit's Woodward Avenue. Its V-8 rumble makes us jealous then embarrassed. "Our four-cylinder turbo sounds strained and wheezy by comparison." **2,948** The six-speed manual gearbox is a pleasant surprise. Short throws with slightly notchy, mechanical feedback are right up there with Honda and Mazda. **4,680** The check engine light comes on, and the code indicates multiple misfiring cylinders. The dealer tells us it's a false alarm and clears it. **5,139** Where'd our power go? Someone pumped 87 octane into the tank, which is technically fine but saps engine output. **7,145** Our left rear tire pops after a brutal encounter with a scrap of concrete loitering in the right lane of a highway. It nearly sours staff photographer Patrick Hoey's camping trip to the Upper Peninsula, but we source a same-day replacement. Cost: \$325.27, installed. **8,048** "Sorry, Ford, but I'm not sold on this EcoBoost engine," declares daily news editor Joey Capparella. "There's no doubt the car is quick, but it lacks urgency."





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- Weighs 27 lbs.

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MEDIUM LOT 62434 62426  
LARGE LOT 62433 62428  
X-LARGE LOT 62432 62429 shown

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CENTRAL PNEUMATIC

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REG. PRICE \$219.99

SAVE \$70

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## SUPER COUPON

### TORQUE WRENCHES

PITTSBURGH

- Accuracy within ±4%
- "Impressive Accuracy, Amazing Value" - Car Craft Magazine

1/4" DRIVE LOT 2696/61277  
3/8" DRIVE LOT 807/61276  
1/2" DRIVE LOT 62431 239 shown

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# \$11.99

REG. PRICE \$29.99

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## SUPER COUPON

### 1 TON CAPACITY FOLDABLE SHOP CRANE

PITTSBURGH

LOT 69445/93840  
61858/69512 shown

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### VEHICLE POSITIONING WHEEL DOLLY

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- 1250 lb. Capacity

LOT 67287/62234  
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SAVE \$55

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## WOW SUPER COUPON

### 1500 WATT DUAL TEMPERATURE HEAT GUN

(572"/1112")

drillmaster

LOT 62340/62546  
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# \$8.99

REG. PRICE \$29.99

SAVE 70%

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### 900 PEAK/ 700 RUNNING WATTS 2 HP (63 CC) 2 CYCLE GAS RECREATIONAL GENERATOR

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## WOW SUPER COUPON

### US GENERAL® 26" 16 DRAWER ROLLER CABINET

LOT 61609/67831 shown

- 1060 lb. Capacity
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**A**

s I drive John Leahy's 1996 Chevrolet Impala SS down Woodward Avenue, he sits shotgun and tells me tales about his heyday spent racing muscle cars along the

storied road in Detroit. Chevys squaring off against Fords, Tri-Power Buicks against hopped-up Pontiacs, big-blocks rumbling up and down all night long.

Today, we're just cruising. The Impala SS wouldn't outrun a modern Honda Accord V-6, and Leahy is more interested in catching up with friends along Woodward than laying rubber at every stoplight. Yet in its heyday, the SS was a bonafide muscle car, and thanks to its subdued looks and four-door body, it didn't attract

as much attention as its performance merited.

After a hiatus of 25 years, the Chevrolet Impala SS returned for the 1994 model year with all the hop-up parts needed to justify its final two letters. Based on a Chevy Caprice sedan, the SS had a beefed-up LT1 V-8; a lower, heavy-duty suspension derived from the Caprice cop car; larger brakes; a limited-slip differential; and dual exhausts. To help passersby tell the Impala SS apart from plebian Caprices, it wore special five-spoke aluminum wheels and a rear spoiler and all its exterior chrome trim was deleted. The majority of the cars were painted black, which was the only choice in 1994 until dark cherry metallic and dark gray joined the palette for '95 and '96.

The Chevrolet Impala SS was far meaner than any standard Caprice, able to run to 60 mph in 7.0 seconds and through the quarter mile in 15.4 seconds, scorching contemporary four-door muscle machines including the Ford Taurus SHO and the supercharged Pontiac Bonneville SSEi. Not that it was



PHOTOGRAPHY BY PATRICK M. HOEY

**1994-1996**

## CHEVROLET IMPALA SS

The Impala SS is a big car meant for big people in a big country who want to get where they're going in a big way.

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a sprinter off the blocks. “[The engine] doesn’t exactly catapult the 4,200-pound car from a dead stop,” we wrote in October 1993, “but it does provide plenty of power for passing.”

Leahy certainly enjoyed the Impala’s straight-line performance on Woodward, terrifying his wife with full-bore launches and even tagging along on the 2001 HOT ROD Power Tour. “I call it my four-door Corvette,” he says. He bought the car, after all, because he ended up selling his 1979 Corvette after marriage and kids arrived, but he still wanted a car that would be fun to drive.



The 5.7-liter LT1 V-8 doesn’t put out big numbers, but hot rod parts are widely available.



Leahy also appreciated the Impala SS’s spaciousness and comfort, whether for road trips or just for cruising around Michigan. The trunk is enormous (at 20.4 cubic feet, it’s more spacious than the trunk in today’s Mercedes-Benz S-Class), and the back seat has enough head- and legroom to easily accommodate 6-foot passengers. My scalp doesn’t come close to touching the cloth headliner.

As we leave the Detroit suburb of Clawson, I adjust the power seats and quickly acclimate to driving the big sedan. The four-gauge instrument cluster is plain and legible, and both the climate-control knobs and the sound system use large controls that are handily within the driver’s reach. The 260-hp V-8 speaks softly and the four-speed automatic glides between gears gently when we pull



## WHY BUY?

Although the Impala SS is relatively young to be called “classic” and was sold in pretty high numbers to count as a “collectible,” it’s a very special formula that has resonated with gearheads for decades. As fewer and fewer of these tire-shredding sedans remain in stock condition (the LT1 engine is easy to hot-rod for more power), and as rear-wheel-drive full-size sedans with V-8s become ever rarer, a well-maintained example like this becomes ever more unusual. It offers a genuine slice of the American muscle-car experience, but it has enough space to bring your buddies along for the ride. There is clearly demand from buyers, too. A stranger inquired about buying this car while we photographed it, an occurrence Leahy says is surprisingly frequent. But as much as the idea of a comfortable sedan with big power seems to resonate among enthusiasts, the concept has almost disappeared from the new-car marketplace. And for that reason, the Chevrolet Impala SS won’t soon be forgotten by enthusiasts.



## THE SPECS

### THIS 1996 IMPALA SS

#### ENGINE:

5.7L OHV V-8/  
260 hp @ 5,000 rpm,  
330 lb-ft @ 3,200 rpm

#### TRANSMISSION:

4-speed automatic

#### DRIVE:

Rear-wheel

#### FRONT SUSPENSION:

Control arms, coil springs

#### REAR SUSPENSION:

Live axle, coil springs

#### BRAKES F/R:

Disc/disc

#### WEIGHT:

4,180 lb

away from lights in traffic, though you’ll find plenty of torque on tap when the road clears and you dip deeper into the throttle. It’s a quick car, but we won’t risk our pride—or Leahy’s immaculately preserved car—by racing anyone on Woodward this time.

A large-diameter steering wheel and light-effort power steering make it easy to maneuver the big Impala—it’s longer than a modern Chevy Tahoe—although even with the performance-oriented shocks and relatively stiff anti-roll bars, the Chevy wallows around corners. The upshot of the suspension tuning is that the Impala SS is remarkably comfortable for a performance-oriented car. Large 255/50R-17 tires help cushion driver and passengers from pothole impacts; engine and road noise are reasonably subdued; and the wide, flat seats are as plush as leather couches. It’s no wonder Leahy enjoys taking this car on multiday road trips.

“To me it’s a performance car, and it’s comfortable and handles nice,” Leahy says. “As long as I can, I think I’m going to keep it.”

The Impala SS still attracts attention because stuffing a high-performance engine into a family sedan remains a pretty unusual formula. Today’s Chevrolet Impala is far less cool than this one, although the idea of a big, comfortable sedan with a hot V-8 under the hood lives on for a little while longer in the shape of the Australian-engineered, 415-hp Chevrolet SS. But this type of car is going the way of the fax machine as buyers turn to front- or all-wheel-drive sedans with smaller, turbocharged engines. The days of packing a 5.7-liter engine into a big, cushy family sedan are long gone.

You would not mistake the Chevrolet Impala SS for a thoroughbred sports car, but its straight-line grunt and badass looks clearly earn it a spot in the annals of traditional muscle cars. It’s a cool car for cruising and lighting up the rear tires, and you can bring four friends along for the ride. Above all, it’s the coolest Chevy Caprice you’ll ever drive. ■



# Feature Car

1964 Mercury Comet Caliente  
**Sold at \$17,280**

S/N 4H25F518078

## WHITE OVER RED VINYL

interior with white vinyl top. 164-hp, OHV 4.3-liter V-8; three-speed automatic transmission. Great equipment list for 1964, including power steering, power brakes, automatic transmission, and wire wheel covers. The Caliente—an upscale version of the Comet model—was advertised in period by Mercury as “Every bit as hot as it looks.” The MSRP before options for this Caliente was \$2,636; Mercury built 9,039 Caliente convertibles in 1964.



## THE STORY BEHIND THE SALE:

**As World War II was winding down, Ford formed the Lincoln-Mercury division, formalizing a ladder of brand status much like General Motors.** While Mercury hasn’t been with us since 2011, it’s also fair to say that the brand had a great run and made some quite memorable cars. Just as the Mercury Cougar was an upscale Ford

Mustang for much of its early life, the Comet was a more expensive version of the cool second-generation Ford Falcon. The 1960s were an especially busy time for Mercury as it went further upmarket to fill the gap left by the Edsel brand’s failure. As with this Comet, Mercury didn’t just make one or two versions of a particular

model; it made a handful. The Comet 202, Comet 404, Caliente, and Cyclone were the four models of this platform that you could choose for 1964. This Caliente convertible was almost as expensive (just \$19 less) as the high-performance Cyclone coupe, which featured a 4.7-liter V-8 as standard equipment. This Caliente was a

very well-presented driver. And with a V-8, automatic transmission, bucket seats, and a power top, it has to be easy to keep pace with modern traffic on the road. Think of it as more like a Mustang and less like a Falcon, and then you’ll understand the personalized statement it makes. Nice car, nice price.



1969 Ford Mustang Mach 1  
**Sold at \$22,680**

The Mustang underwent its first complete makeover in 1969, and this attractive



1960 Oldsmobile Dynamic 88  
**Sold at \$27,000**

power-operated softtop. A big American convertible with a big

S/N 9F02M164514

## RED WITH BLACK-

accented hood over black vinyl interior. 290-hp, OHV 5.8-liter V-8; three-speed automatic transmission. Older paint and trim with good chrome. The hood with racing-type locating pins and nonfunctional air scoop, rear-window louvers, rear wing, and Magnum wheels complete the Mach 1 look. A decent presentation but not a show car.

fastback shape led to 299,824 sales. Some 72,458 of them had the Mach 1 treatment, partly as a homologation package for Trans-Am racing, and it was a big hit. It still looks exceptionally attractive today. This car is not for originality freaks, but it presents well and even has tires that look like the original Goodyear Polyglas items. A fair and very affordable price for a decent example of an important car.

S/N 607M53785

## WHITE OVER TWO-TONE

blue interior with white vinyl top. 240-hp, OHV 6.1-liter V-8; three-speed automatic transmission. No fins here, thank you. Very good paint and chrome. Original engine detailed but not fresh. The interior shows original door panels and dash; the seats have been reupholstered in a non-matching pattern. Equipped with power steering, power brakes, and

American V-8 is tough to resist and even tougher not to love. One of 12,271 made, this Dynamic 88 convertible is poised and ready to take up two parking spaces wherever you drive it since it is just as big as a modern full-size SUV. It is the value-edition Olds 88 with a Rocket V-8 meant to run on cheaper, regular-grade gas. (In 1960, a gallon of gas was 31 cents.) This auction price is spot on with the market.



1978 Triumph Spitfire  
**Sold at \$7,560**

S/N FM96958U0C

### BLUE OVER BEIGE

interior with a tan vinyl top. 57-hp, OHV 1.5-liter inline-four; four-speed manual transmission. Rebuilt engine; the underhood is show-detailed. Excellent paint; good brightwork. Nice interior redone to a mostly original style. Very nice wood dash and wood-rim steering wheel.

It's all about the quality of the restoration here. Although the Triumph Spitfire is the least valuable Triumph model you can collect thanks to the model's travails of indifferent assembly when new and the depredations of rust since then, this example is as nice as they come. It's as well done as any British roadster you'd see at any car show, and the Michelotti-styled bodywork looks more attractive with every passing year. The buyer bought this car for the price of a quality repaint and got the rest of the car for free.



1969 Pontiac Trans Am Ram Air IV  
**Sold at \$194,400**

S/N Not available

### CAMEO WHITE WITH BLUE

stripes over blue custom-trim vinyl interior. 345-hp, OHV 6.6-liter V-8; three-speed automatic transmission. Excellent paint and chrome. All the trim and details are well done. Said to be one of just 55 examples of the 1969 Trans Ams produced with the Ram Air IV, a slightly detuned racing engine.

One of just two built with the column-shift three-speed automatic transmission.

Pontiac factory documents confirm that this car was built for internal company use, perhaps as a test car for car magazines. Restored in the 1990s and freshened in 2010 by a top-tier shop, this Trans Am just could be a keeper. Yes, it's big money, but it's the best quality with the most exclusive provenance. With cars at this level, it's all about the restoration and the selection of options.



1991 Ford Bronco Eddie Bauer Edition  
**Sold at \$12,420**

S/N 1FMEU15N4MLA45060

### BLACK AND TAN OVER

tan cloth interior. 185-hp, OHV 4.9-liter V-8; five-speed manual transmission. The tan hardtop is removable. Excellent paint; the trim is all in very good to excellent condition. Equipped with a tilt steering wheel, power windows, power door locks, cruise control, and air-conditioning. The Eddie Bauer Edition interior is good but shows some wear. Cosmetically, this Bronco is a standout.

We've recently seen a fair share of early Broncos at auction, but once you move into the generations post-1986, you get a much nicer experience. This one-owner example with four-wheel drive, rare five-speed manual transmission, and Eddie Bauer trim was a bargain. But keep in mind that this later Bronco (based on 1986 F-series pickup) is good for creature comforts, bad for the complexity and cost of repairs.



1987 Buick Grand National  
**Sold at \$20,520**

S/N 1G4GJ1178HP447476

### BLACK OVER BLACK-AND-

gray cloth interior. 245-hp, turbocharged 3.8-liter V-6; three-speed automatic transmission. The paint is showing some wear and a few small intrusions. Good brightwork; good glass and trim. The interior shows wear, but it is still nice. Options include tilt wheel, black GNX wheels, and an aftermarket audio system with AM/FM and a CD player. From the last year of production; 32,000 miles on the odometer.

When new, this Grand National had an MSRP of \$15,136, plus options. Many Grand Nationals show up at collector-car auctions still new and in the wrapper, so it is refreshing to see one that was used and enjoyed. This is a good price for a Grand National in this condition, and it makes it easier to appreciate such a car when you don't have to fret about putting miles on it.



1966 Chevrolet Biscayne  
**Sold at \$32,400**

S/N 153116L214481

### BEIGE OVER TWO-TONE

tan vinyl-and-cloth interior. 425-hp, OHV 7.0-liter V-8; four-speed manual transmission. Very nice paint; great chrome. The interior is all original style and could be original all the way through with the exception of the Sun tachometer mounted to the column of the tilt steering wheel.

Pretty much your definition of a "sleeper" for street racing. Did we

mention it's beige? Back in the day, this looked just like hundreds of Chevys, and only

the initiated would know that the lack of exterior trim, blackwall tires, dog-dish hubcaps, dual exhaust, and 427 badges meant that a big-block Turbo Jet V-8 was in the engine bay. Serious as pink slips at midnight, this is a well-bought car in great shape cosmetically. Worth every penny of this price, especially with the manual transmission. This is a tough, fast car from the glory days of Detroit. It's as cool as a Shinola wristwatch.



1974 Chevrolet Camaro Z28  
**Sold at \$19,440**

S/N 1Q87T4N110161

### ORANGE OVER BLACK

vinyl interior. 245-hp, OHV 5.7-liter V-8; three-speed automatic transmission. Very good paint as well as graphics. The brightwork is good; correct style blacked-out grille. Wood grain on the instrument cluster. Options include tilt wheel, power brakes, dual exhaust, and A/C. Very nice interior. Overall, driver-plus quality.

This very nice Z28 might even be good enough to win its class at a

regional show. This year marked the introduction of a restyled nose and 5-mph bumpers to the Camaro and the last year before exhaust catalysts. Lack of documentation had to have hurt the sale price of this vehicle. With bulletproof documentation presented in an informative way, you increase your audience at sale time. Values of the beautifully styled Camaro from the 1970s are headed upward. ■



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# WHERE ARE THEY NOW?

## CHRIS BANGLE



**Chris Bangle is an Ohio-born designer who is an alumnus of the Art Center College of Design in Pasadena, California, and spent his formative years at Opel and Fiat before beginning a long tenure at BMW, the brand that he is most often associated with. We caught up with Bangle at his home in Italy, via telephone.**

**You spent 17 years as chief of design at BMW. Was it difficult to leave?**

My goal was to have an exit when I was 50. I really liked working for BMW and Fiat and General Motors, but you realize that you want to have different relationships with design, with art, with people, with family.

**Your current company, Chris Bangle Associates, is based in Italy in a very interesting complex.**

Our studio here is about an hour south of Torino [Turin] in a set of built-together farm buildings the Italians would call a *borgata*, which is smaller than a village but bigger than a villa. It's the kind of thing that was built over centuries.

**What sort of projects are you working on?**

We're up to our necks in superyachts. We've signed a long-term agreement with Sanlorenzo Yachts, which is the premier yacht company in the world. We've had wonderfully challenging projects, like a new cognac bottle for Hennessy. For three years we were very heavily involved with Samsung in almost all their divisions, from appliances on through televisions and cellphones. Spread throughout this are occasional car things, an electric car here and there. I often tell my clients that everything we do is car design. Car design is fundamentally about crafting motion into an object that has so much character and personality that the user identifies with it.

**What's your take on the current state of automotive design?**

If someone told me you're watching the death throes of a culture, it would be really hard to argue against it. The kind of engagement in car design that I'm seeing is so heavily immersed in kowtowing to the language of a brand that it's very difficult for me to find a car

designer anywhere who is practicing the art as it has grown up through many decades.

**Looking back at your tenure at BMW, do any designs stand out?**

During the time I was there, I think we worked on some really seminal cars. The X5 alone—looking back on it now, it almost seems innocent. It's hard to imagine that car ushered in so much of a change in our whole concept of what a premium SUV is. I'm quite proud of that. The original Z4 was a fabulous car, as was its successor but for different reasons. The E60 5 Series is still to me probably the most avant-garde car I see running around.

**So, about that E65 7 Series and the infamous "Bangle Butt"...**

Of course, Adrian [van Hooydonk] designed the car. The fact of the matter is that I've been associated with that for so long—people still comment and say how right I was and how wrong they were or how shocked they were. But there's no getting away from the fact that the 7 Series was probably the single most important project that we worked on there. I'm not saying it's the best; I'm saying that it's the most important car I did, and it was basically a milestone for everyone involved.

**What about autonomous vehicles?**

I'm a proponent that this is an inevitability. The car is freedom, but every single step of the way has been the deterioration of that. And now you have the ultimate. What do these things look like? Well, on one hand it doesn't matter what they look like. Who remembers what taxis look like? But it could be that this ushers in a new aesthetic or maybe the design of the car changes more rapidly because we want the space inside to be different. ■

ILLUSTRATION BY: MARK OLIVER

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